

Exp. No.:

Date :



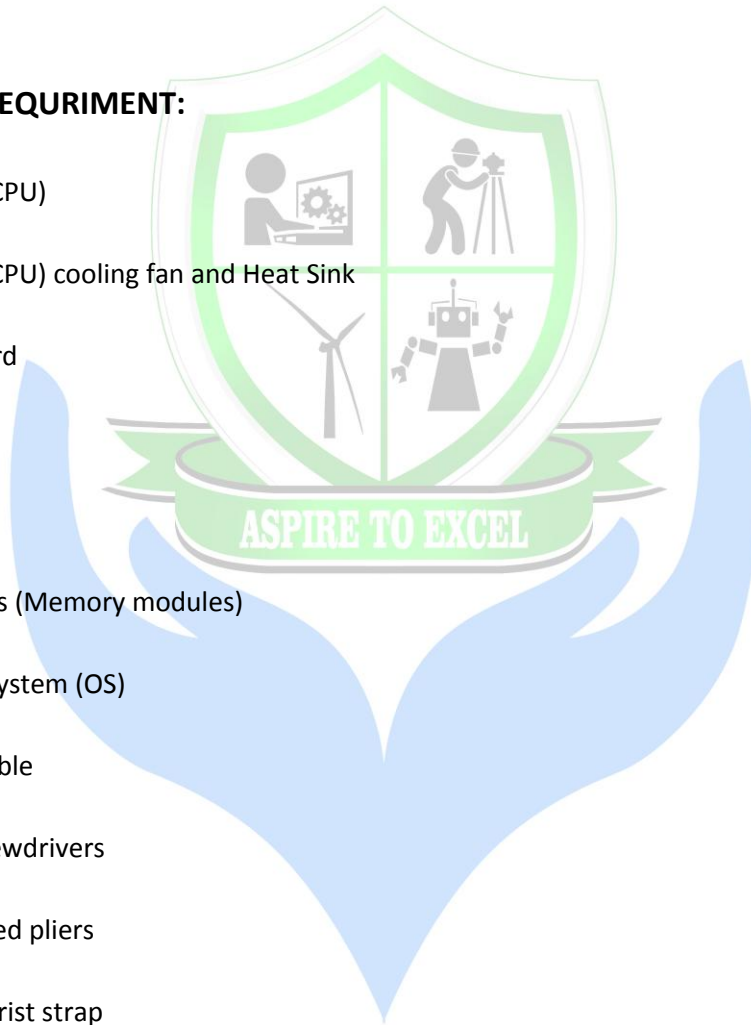
## IDENTIFYING THE COMPONENTS OF COMPUTER

### AIM:

To Identifying the components of Computer and internal components of CPU.

### COMPONENTS REQUIREMENT:

- Processor (CPU)
- Processor (CPU) cooling fan and Heat Sink
- Motherboard
- Sound Card
- Hard Drive
- RAM DIMMs (Memory modules)
- Operating System (OS)
- Ethernet Cable
- A set of screwdrivers
- Needle-nosed pliers
- Antistatic wrist strap
- Disk drive units
- Keyboard and Mouse
- Monitor

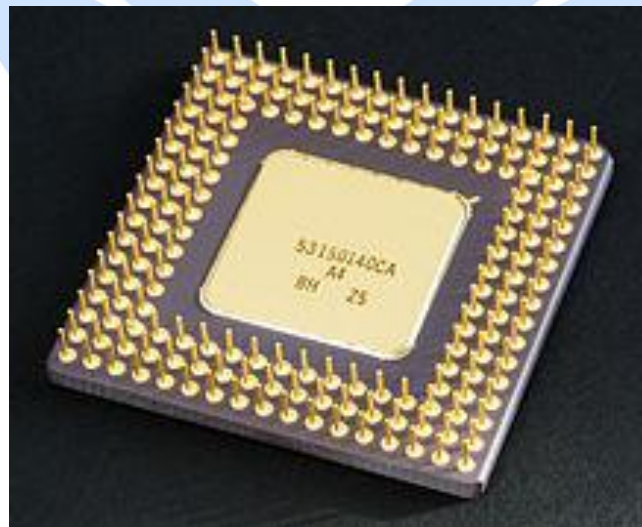


**DESCRIPTION:**

- **PROCESSOR (CPU):**

A processor, or "microprocessor," is a small chip that resides in [computers](#) and other electronic devices. Its basic job is to receive [input](#) and provide the appropriate [output](#). While this may seem like a simple task, modern processors can handle trillions of calculations per second.

The central processor of a computer is also known as the [CPU](#), or "central processing unit." This processor handles all the basic system instructions, such as processing [mouse](#) and [keyboard](#) input and running [applications](#). Most [desktop computers](#) contain a CPU developed by either Intel or AMD, both of which use the [x86](#) processor [architecture](#). Mobile devices, such as [laptops](#) and [tablets](#) may use Intel and AMD CPUs, but can also use specific mobile processors developed by companies like ARM or Apple.



Modern CPUs often include multiple processing cores, which work together to process instructions. While these "cores" are contained in one physical unit, they are actually individual processors. In fact, if you view your computer's performance with a system monitoring [utility](#) like Windows Task Manager (Windows) or Activity Monitor (Mac OS X), you will see separate graphs for each processor. Processors that include two cores are called [dual-core](#) processors, while those with four cores are called [quad-core](#) processors. Some high-end workstations contain multiple CPUs with multiple cores, allowing a single machine to have eight, twelve, or even more processing cores.



Besides the central processing unit, most desktop and laptop computers also include a [GPU](#). This processor is specifically designed for rendering graphics that are output on a [monitor](#). Desktop computers often have a [video card](#) that contains the GPU, while mobile devices usually contain a graphics chip that is integrated into the [motherboard](#). By using separate processors for system and graphics processing, computers are able to handle graphic-intensive applications more efficiently.

- **PROCESSOR CPU) COOLING FAN AND HEAT SINK:**

Cooling fan is required to remove the [waste heat](#) produced by [computer components](#), to keep components within permissible [operating temperature](#) limits. Components that are susceptible to

temporary malfunction or permanent failure if overheated include [integrated circuits](#) such as [CPUs](#), [chipset](#), [graphics cards](#), and [hard disk drives](#).



Components are often designed to generate as little heat as possible, and computers and operating systems may be designed to reduce power consumption and consequent heating according to workload, but more heat may still be produced than can be removed without attention to cooling. Use of [heat sinks](#) cooled by airflow reduces the temperature rise produced by a given amount of heat. Attention to patterns of airflow can prevent the development of hotspots. [Computer fans](#) are widely used along with heat sinks to reduce temperature by actively exhausting hot air. There are also more exotic cooling techniques, such as [liquid cooling](#).



**A 3-fan heat sink mounted on a graphics card**

A **heat sink** (also commonly spelled *heat sink*) is a passive [heat exchanger](#) that transfers the heat generated by an electronic or a mechanical device to a [fluid](#) medium, often air or a liquid coolant, where it is [dissipated](#) away from the device, thereby allowing regulation of the device's temperature at optimal levels. In computers, heat sinks are used to cool [central processing](#)

[units](#) or [graphics processors](#). Heat sinks are used with high-power semiconductor devices such as power [transistors](#) and optoelectronics such as lasers and light emitting diodes

(LEDs), where the heat dissipation ability of the component itself is insufficient to moderate its temperature.

- **MOTHERBOARD :**

The motherboard is the main [circuit board](#) of your computer and is also known as the main board or logic board. If you ever open your computer, the biggest piece of silicon you see is the motherboard. Attached to the motherboard, you'll find the [CPU](#), [ROM](#), memory [RAM](#) expansion slots, [PCI](#) slots, and [USB](#) ports. It also includes controllers for devices like the [hard drive](#), DVD drive, keyboard, and mouse. Basically, the motherboard is what makes everything in your computer work together.



Each motherboard has a collection of chips and controllers known as the [chipset](#). When new motherboards are developed, they often use new chipsets. The good news is that these boards are typically more efficient and faster than their predecessors. The bad news is that older [components](#) often do not work with new chipsets. Of course, if you are planning on upgrading multiple components, it may be more cost-effective to just buy a new computer.



- SOUND CARD:**

The sound card is a [component](#) inside the computer that provides audio [input](#) and [output](#) capabilities. Most sound cards have at least one [analog](#) line input and one stereo line [output](#) connection. The connectors are typically 3.5 mm mini jacks, which are the size most headphones use. Some sound cards also support [digital](#) audio input and output, either through a standard TRS (tip-ring-sleeve) connection or via an optical audio port, such as [To slink](#) connector.



While there are many types of sound cards, any type that produces an analog output must include a digital-to-analog converter ([DAC](#)). This converts the outgoing signal from digital to analog, which can be played through most speaker systems. Sounds cards that support analog input also require an analog-to-digital converter ([ADC](#)). This [digitizes](#) the incoming analog signal, so the computer can process it.

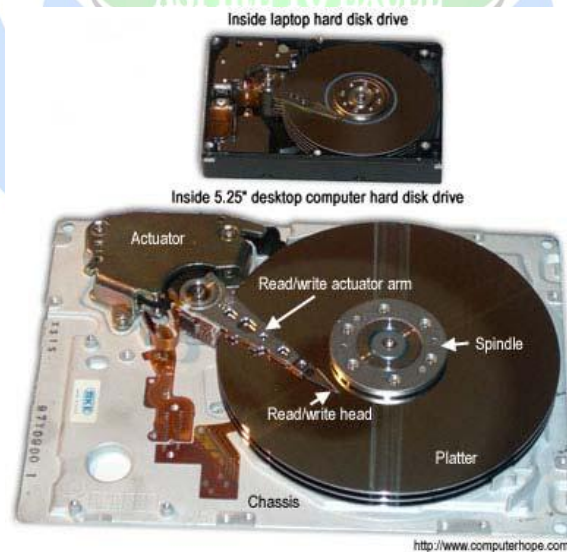
Back of Sound Card



In some computers, the sound card is part of the [motherboard](#), while other machines may have an actual card that reside in a [PCI](#) slot. If you want to more audio capabilities to your computer, such as additional input or output channels, you can install a new sound card. Professional sound cards often support higher [sampling](#) rates (such as 192 kHz instead of 44.1 kHz) and may have more inputs and outputs. Some cards may also have 1/4 in. connectors instead of 3.5 mm, which accommodates most instrument outputs.

- **HARD DRIVE :**

A **hard disk drive** (sometimes abbreviated as **Hard drive**, **HD**, or **HDD**) is a [non-volatile memory hardware](#) device that permanently stores and retrieves information. There are many variations, but their sizes are generally 3.5" and 2.5" for desktop and laptop computers respectively. A hard drive consists of one or more [platters](#) to which data is written using a magnetic head, all inside of an air-sealed casing. [Internal](#) hard disks reside in a [drive bay](#), connect to the [motherboard](#) using an [ATA](#), [SCSI](#), or [SATA](#) cable, and are powered by a connection to the [PSU](#) (power supply unit).



A hard drive can be used to store just about any type of data, including pictures, music, videos, and text documents. Computers have a hard drive and use it to store files for the [operating](#)



[system](#) and software that run on the computer, as well as files created or downloaded to the computer by a user.

The amount of data a hard drive can store depends on the storage space of the hard drive. Older hard drives had a storage size of several hundred [megabytes \(MB\)](#) to several [gigabytes \(GB\)](#). Newer hard drives have a storage size of several hundred gigabytes to several [terabytes \(TB\)](#). Each year, new and improved technology allows for increasing hard drive storage sizes.

- **RAM DIMMs :**

A DIMM or dual in-line memory module comprises a series of [dynamic random-access memory integrated circuits](#). These modules are mounted on a [printed circuit board](#) and designed for use in [personal computers](#), [workstations](#) and [servers](#). DIMMs began to replace [SIMMs](#) (single in-line memory modules) as the predominant type of memory module as [Intel P5](#)-based [Pentium](#) processors began to gain market share.



While the contacts on SIMMs on both sides are redundant, DIMMs have separate electrical contacts on each side of the module. Another difference is that standard SIMMs have a 32-bit data path, while standard DIMMs have a 64-bit data path. Since [Intel](#)'s Pentium, many processors have a 64-bit [bus](#) width, requiring SIMMs installed in matched pairs in order to populate the data bus. The processor would then access the two SIMMs in parallel. DIMMs were introduced to eliminate this disadvantage.

- **OPERATING SYSTEM (OS):**

An operating system (OS) is [system software](#) that manages [computer hardware](#) and [software](#) resources and provides common [services](#) for [computer programs](#). All [computer programs](#), excluding [firmware](#), require an operating system to function.

[Time-sharing](#) operating systems schedule tasks for efficient use of the system and may also include accounting software for cost allocation of processor time, mass storage, printing, and other resources.

For hardware functions such as input and output and [memory allocation](#), the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and frequently makes [system calls](#) to an OS function or is interrupted by it. Operating systems are found on many devices that contain a computer – from [cellular phones](#) and [video game consoles](#) to [web servers](#) and [supercomputers](#).

The dominant desktop operating system is [Microsoft Windows](#) with a market share of around 82%. [OS X](#) by [Apple Inc.](#) is in second place (9.8%), and [Linux](#) is in third position (1.5%). In the [mobile](#) ([smart phone](#) and [tablet](#) combined) sector [Android](#) by [Google](#) is dominant with 65% and [iOS](#) by Apple is placed second with around 25%. Linux is dominant in the server and supercomputing sectors. Other specialized classes of operating systems, such as embedded and real-time systems, exist for many applications.

- **ETHERNET CABLE:**

Ethernet is a way of connecting computers together in a [local area network](#) or LAN. It has been the most widely used method of linking computers together in LANs. The basic idea of its design is that multiple computers have access to it and can send data at any time.



If two computers send data at the same time, a collision will occur. When this happens, the data sent is not usable. In general, both computers will stop sending, and wait a random amount of time, before they try again. A special protocol was developed to deal with such problems. It is called [Carrier sense multiple access with collision detection](#) or CSMA/CD.

- **DISK DRIVE :**

A disk drive is a randomly addressable and rewritable storage device. The term can be broadly interpreted to include optical drives and in earlier times, floppy drives. However, in popular usage, it has come to relate mainly to hard disk drives (HDDs).



<http://www.computerhope.com>

Disk drives can either be housed internally within a computer or housed in a separate box that is external to the computer. They are found in PCs, servers, laptops and storage arrays, for example. They work by rotating very rapidly around a head or heads, which read and write data.

They differ from solid state drives (SSDs), which have no moving parts and offer greater performance, but also cost more and generally offer less capacity.

- **KEYBOARD:**

In [computing](#), a computer keyboard is a [typewriter-style device](#) which uses an arrangement of buttons or [keys](#) to act as a [mechanical lever](#) or [electronic switch](#). Following the decline of [punch cards](#) and [paper tape](#), interaction via [teleprinter](#)-style keyboards became the main [input device](#) for [computers](#).

A keyboard typically has characters [engraved](#) or [printed](#) on the keys and each press of a key typically corresponds to a single written [symbol](#). However, to produce some symbols requires pressing and holding several keys simultaneously or in sequence. While most keyboard keys produce [letters](#), [numbers](#) or signs ([characters](#)), other keys or simultaneous key presses can produce actions or execute computer commands.



Despite the development of alternative input devices, such as the [mouse](#), [touchscreen](#), [pen devices](#), [character recognition](#) and [voice recognition](#), the keyboard remains the most commonly used device for direct (human) input of [alphanumeric](#) data into computers.



In normal usage, the keyboard is used as a [text entry interface](#) to type text and numbers into a [word processor](#), [text editor](#) or other programs. In a modern computer, the interpretation of key presses is generally left to the software. A computer keyboard distinguishes each physical key from every other and reports all key presses to the controlling software. Keyboards are also used for computer gaming, either with regular keyboards or by using keyboards with special gaming features, which can expedite frequently used keystroke combinations. A keyboard is also used to give commands to the operating system of a computer, such as [Windows'](#) [Control-Alt-Delete](#) combination, which brings up a task window or shuts down the machine. A [command-line interface](#) is a type of [user interface](#) operated entirely through a keyboard, or another device doing the job of one.

- **MOUSE:**

A **computer mouse** is a [pointing device](#) (hand control) that detects [two-dimensional](#) motion relative to a surface. This motion is typically translated into the motion of a [pointer](#) on a [display](#), which allows a smooth control of the [graphical user interface](#).





Physically, a mouse consists of an object held in one's hand, with one or more buttons. Mice often also feature other elements, such as touch surfaces and "wheels", which enable additional control and dimensional input.

- **MONITOR:**

Alternatively referred to as a **video display terminal (VDT)** and **video display unit (VDU)**, a **monitor** encompasses a display screen for video images and casing that holds it. In its most common usage, monitor refers only to devices that contain no electronic equipment other than what is essentially needed to display and adjust the characteristics of an image.



Like most early TVs, the early computer monitor's were comprised of a [CRT](#) (Cathode Ray Tube) and a fluorescent screen. Today, all monitors are created using [flat panel display](#) technology, like that shown in the image.

**RESULT:**

## ASSEMBLING OF A PERSONAL COMPUTER

### AIM:

To assembling the PC with all the required hardware, SMPS, system hard disk controller, display adapter and disk drive units of computer.

### COMPONENTS REQUIREMENT:

- Processor (CPU)
- Processor (CPU) cooling fan and Heat Sink
- Motherboard
- Sound Card
- Hard Drive
- RAM DIMMs (Memory modules)
- Operating System (OS)
- Computer Case with Power Supply
- Ethernet Cable
- A set of screwdrivers
- Needle-nosed pliers
- Antistatic wrist strap
- Disk drive units
- Keyboard and Mouse
- Monitor



**PROCEDURE****STEP 1: PREPARE YOUR WORKSPACE****1. TAKE INVENTORY:**

Before you start, take inventory of your parts. Do not begin assembling your computer if you don't have everything you need. Begin the step-by-step process once you have determined you have everything you need.



**Take Inventory of the Different Computer Parts**

**2. MAKE SPACE, MAKE TIME:**

Building a PC take space - about a dining room table worth. So make sure you have plenty of working room and a few hours to proceed with minimal interruption. Work on a flat, stable table top surface or bare floor, where you have room to layout all of the items.

**3. PREPARE GROUNDING PROTECTION:**

Use an inexpensive antistatic wrist strap (they are often priced at less than \$6) is the perfect preventive measure if you have no alternative to working on carpet. Remember, a table top or bare floor is always the best place to build your system. Make sure you are wearing your antistatic wrist strap

correctly (it does you no good at all if you do not wear it!), and you are ready to proceed. Look Figure 2 for details.



Figure 2: Antistatic Wrist Strap

#### 4. HAVE THE DRIVERS READY:

Assuming you have another internet connected PC, download the latest drivers from the vendors' websites for each component you will be installing. Sometimes drivers are updated between the time the component was manufactured and the time you are installing it. It is always best to have the latest. Copy them to a CD for easy access.

#### STEP 2: INSTALL THE MOTHERBOARD



Figure 3: Motherboard in an Antistatic Bag

Great care should be taken when installing the motherboard. First, take the board out of its packaging and put it on top of the antistatic bag it came in (see Figure 3). Remember, you always want to safeguard your components from potentially hazardous static electricity (wear your strap).

Before you secure the motherboard onto the PC case/chassis, inspect it carefully for any visible defects.

Next, review the motherboard manual, to make sure you are familiar with the motherboard layout and understand which socket is which. Manuals are extremely helpful, usually easy to read, and include illustrations. Following you can find instruction on how to install the processor, the heat sink, and the memory modules on the motherboard. You should not place the motherboard in the computer case until you are told to do so.

### STEP 3: INSTALL THE PROCESSOR (CPU)

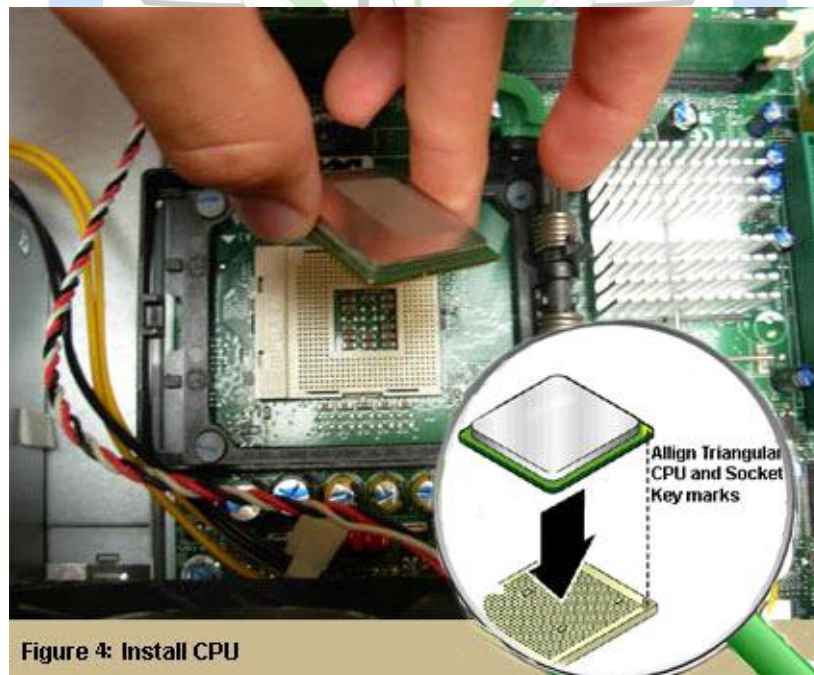
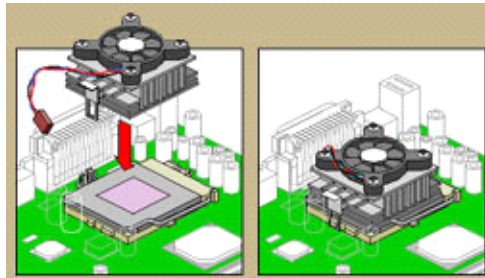


Figure 4: Install CPU

Use the unlocking mechanism to open the CPU socket which is usually lever. Carefully line up the pins and place the chip in its socket; it will fit only when oriented the proper way. An arrow or a missing pin on one corner of the chip will show you how to line things up.

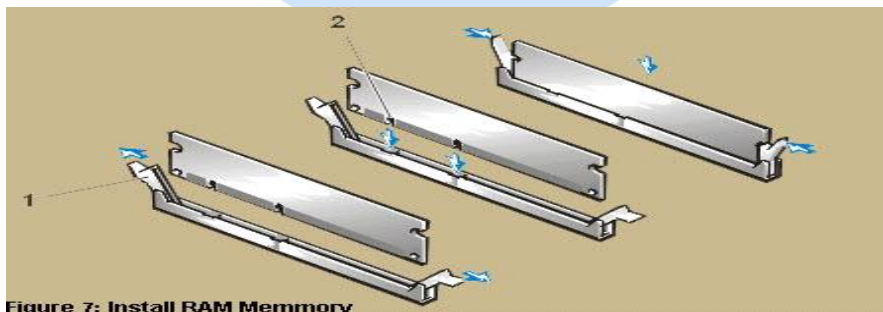


**STEP 4: INSTALL THE CPU HEAT SINK****Figure 5: Install CPU Heat Sink**

Follow the manufacturer's directions to install the heat sink and the fan that will cool the processor. If you bought an OEM CPU and a separate heat sink, you may need to spread a thin layer of the thermal grease that came with the heat sink over the chip to ensure proper transfer of heat (some heat sinks come with this grease already applied).

Attach the clip that holds the heat sink in place keeping in mind that it may require a fair amount of force. Again, follow the instructions that came with the heat sink. They will show you how to fit it correctly. If you are in doubt, you can visit the manufacturer's website for more information. Figure 6 will also prove to be of great help to you.

Plug the CPU fan's power connector into the proper connector on the motherboard.

**STEP 5: INSTALL THE MEMORY MODULES (RAM MEMMORY)****Figure 7: Install RAM Memory**

In order to install the memory modules, insert them into the proper sockets (Figure 7) and push down firmly but evenly until the clips on both sides of the socket pop into place. If your motherboard supports dual-channel memory, consult the user manual to determine which pairs of RAM sockets you

should use. The motherboard and the CPU are the brain and nerve center of your PC, so selecting these components is the most important decision you'll make.

#### STEP 6: PLACE THE MOTHERBOARD INTO THE CASE



Figure 8: Remove Motherboard Tray

Some PC cases have a removable motherboard tray. If yours does, remove the screws holding it in place and pull it out of the case.



Figure 9: Screw Brass Standoffs Into the Motherboard

Check the layout of the sockets on the motherboard, and confirm that the ports on your motherboard's back panel match the holes on the case's Input/output (I/O) shield that is installed in your case. If necessary, remove the old I/O shield (Figure 10) by tapping it firmly a few times with the butt-end of a screwdriver, and then replace it with the shield that came with the new motherboard.



Carefully position the motherboard on top of the brass standoffs (Figure 11), line up all the holes, and use the screws that accompanied the case to fasten down the motherboard. If you are using a removable tray in your system, slide the tray and motherboard back into the case and then secure the tray.



**Figure 11: Mount the Motherboard**

**STEP 7: CONNECT THE POWER SUPPLY**

Making the proper connections is crucial to successfully assembling your PC system. Fortunately, manufacturers provide color-coded power cables and unique connector shapes to make the job easy.

First, plug the large ATX power connector (Figure 12a) from your power supply into the matching port on your motherboard. Look Figure X for details.

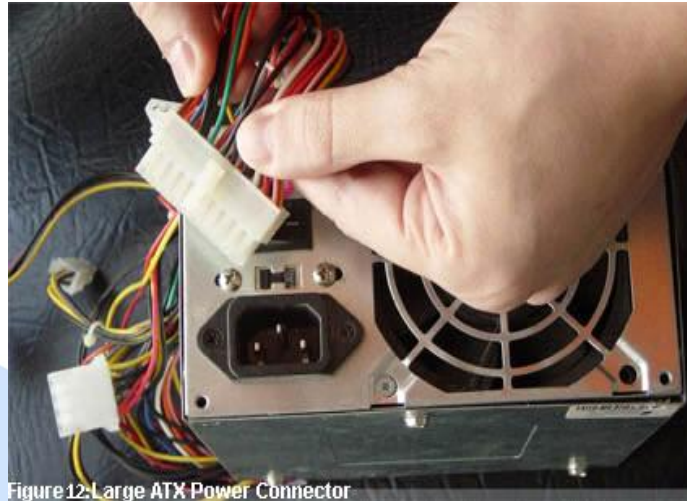
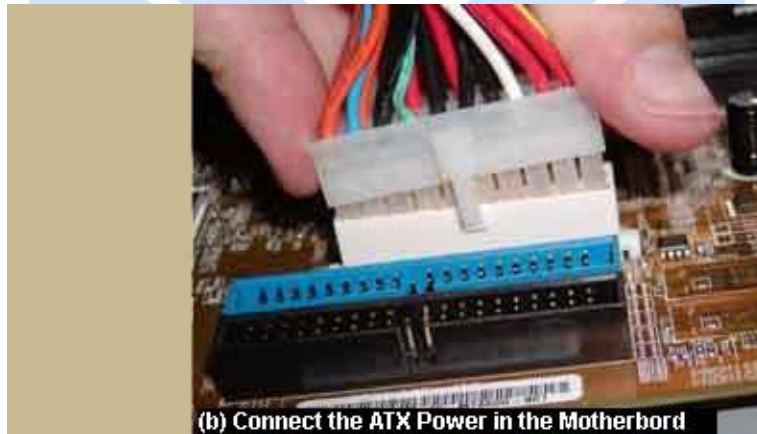


Figure 12: Large ATX Power Connector



(b) Connect the ATX Power in the Motherbord

Locate the smaller, square processor power connector (Figure 13) (you cannot miss it - it is the one sprouting the yellow and black wires) and attach it to the motherboard. Note: your connector is usually located near the processor. As always, refer to your motherboard's manual for the exact locations.





Figure13: Square Processor Power Connector

Use your motherboard user manual and find the description about front-panel connectors. Attach each of the tiny leads from the power and reset switches (Figure 14), the hard-disk activity lights, the PC speaker, and any front-panel USB and FireWire ports to the corresponding pin on your motherboard. The needle-nose pliers are useful for manipulating small pieces.

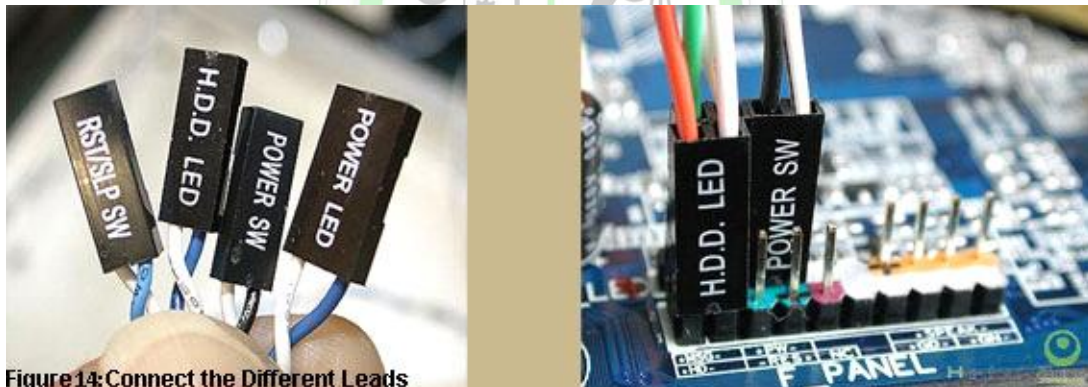


Figure14: Connect the Different Leads

#### STEP 8: INSTALL THE GRAPHICS/VIDEO CARD

World Business news broadcaster [www.http://yahoo.com/](http://yahoo.com/)

metal piece where the monitor connector will emerge) (Figure 15).

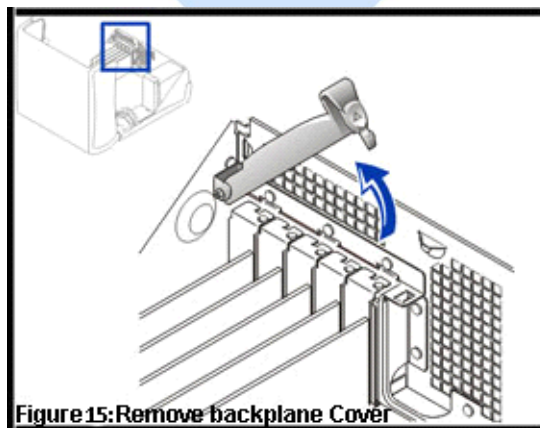
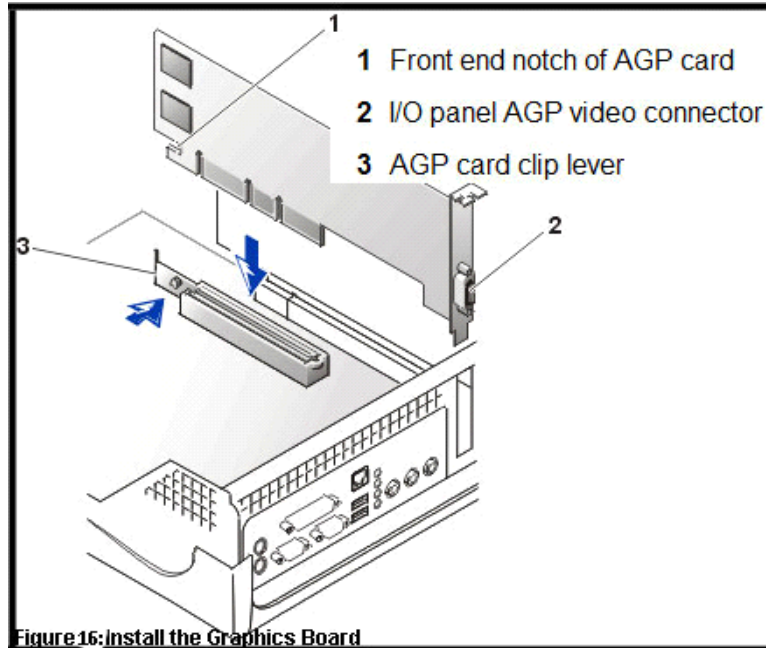


Figure15: Remove backplane Cover

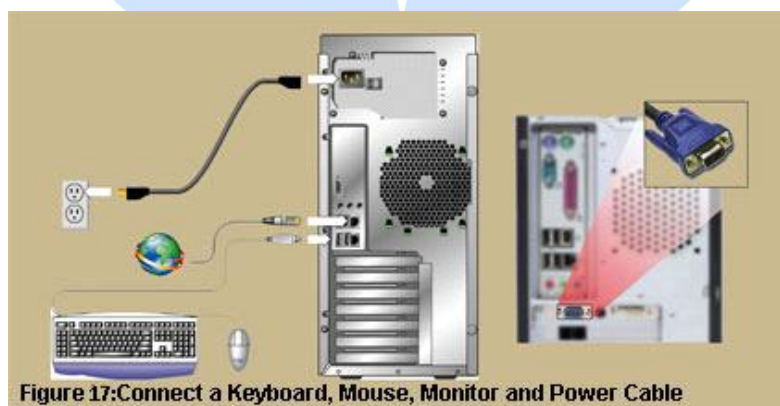




Some graphics boards require a dedicated connection to your computer's power supply. If yours does, you should plug in the correct power connector now. Some video cards allow the insertion of a second video card connected to the first. If you purchased such a configuration, install and connect the second video card.

#### **STEP 9: CONNECT THE KEYBOARD, MOUSE, AND MONITOR**

Connect a keyboard, mouse, monitor, and power cable to your computer and turn it on



If the internal fans begin to whirl, the system beeps, and you see the machine starting to boot, power down by holding the power button for 5 seconds and continue building. If nothing happens, back up a step and recheck all of your connections. Make sure that both the processor and the memory are

properly seated, and recheck those minuscule leads connecting the motherboard to the power and reset switches. If it performs as expected, shut down your PC, unplug it, and open the case.

### STEP 10: INSTALL THE DRIVES

Now it is time to install your drives. This is an easy process, but it requires attention to detail. Make any necessary changes to jumpers on the drives before mounting them in the case. A two-drive system (one or two SATA hard drives, plus one parallel ATA optical drive, for example) is easy to set up; the SATA drives are jumperless, and the optical drive can be set as master on its own parallel ATA channel. Many cases have removable drive rails or cages to house drives. Figure 18 will prove to be of great help.

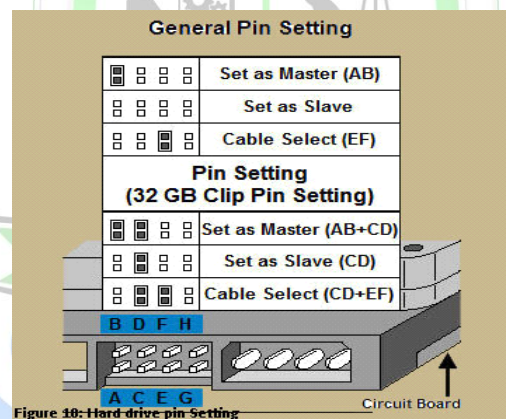


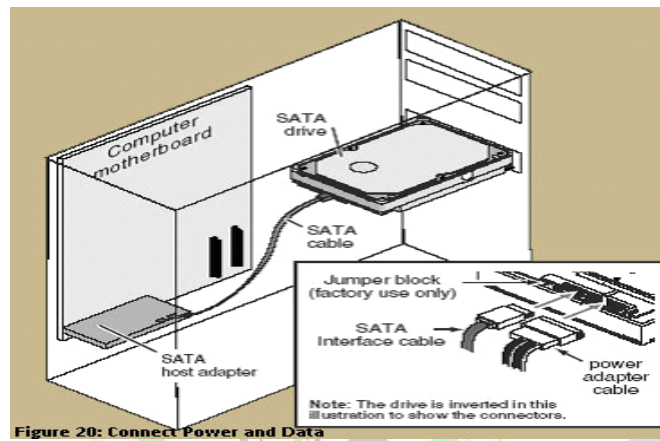
Figure 18: Hard drive pin Setting

Use the included screws to attach your drives to the rails or cage, and slide them into the case. For externally accessible drives such as a DVD recorder, you can save time by installing one drive rail and sliding the drive in for a test fitting to make sure that its front is flush with the case (Figure 19).



Figure 19: Attach your Drives

When the drives are installed, connect power and data cables to each one. Parallel ATA drives use wide, flat data cables that can be installed only in the correct way. Floppy drives use a similar but smaller cable; SATA drives use a thin, 1cm-wide data cable. SATA drives use a new type of power connector that many power supplies don't come with. Fortunately, many motherboards ship with adapters for converting a standard four-pin power connector to a SATA power connector.

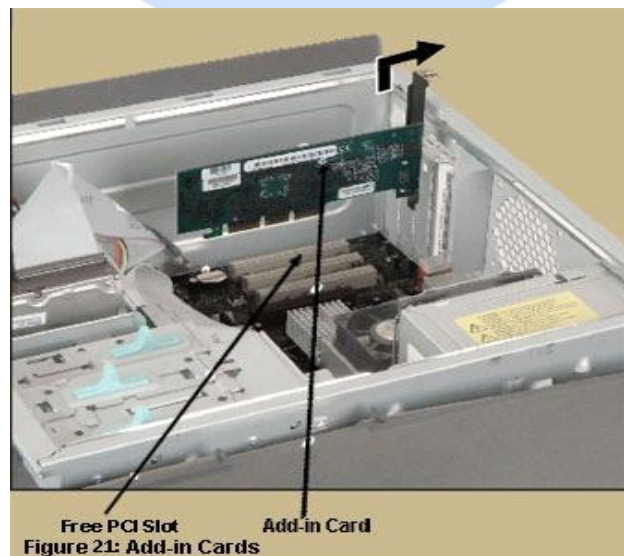


### STEP 11: INSTALL THE ADD-IN CARDS

For each add-in card, you must choose a free PCI slot

. Remove its backplane cover to allow access from the rear of the case. Carefully position the card above the slot, and press down firmly to seat the card.

Secure the card with a screw.



Many motherboards have additional sound connectors or ports housed on small add-in boards. Some of these plug into slots on the motherboard; others screw into the back of the case in place of slot covers. Usually the additional ports are not essential to your PC's operation. For example, if you install a sound card, you do not need connectors to the motherboard's built-in sound chip. Check your motherboard manual to determine what each of these boards does.

#### **STEP 12: TURN THE COMPUTER ON**

Check your PC Set Up:

It is time to turn on your system and check your PC set up. Make sure the keyboard, mouse, and monitor are all plugged into the appropriate ports on the back of the PC. Plug the power cord back in, and turn the machine on.



**Figure 22: Turn the Computer On**

**RESULT:**



# **HARD DISK PARTITION AND OS INSTALLATION**



## HARD DISK PARTITIONING

### AIM:

To partition the given 20GB hard disk into four drives such as first drive C, second drive D, third drive E, fourth drive F of the capacity 5GB each.

### COMPONENTS REQUIREMENT:

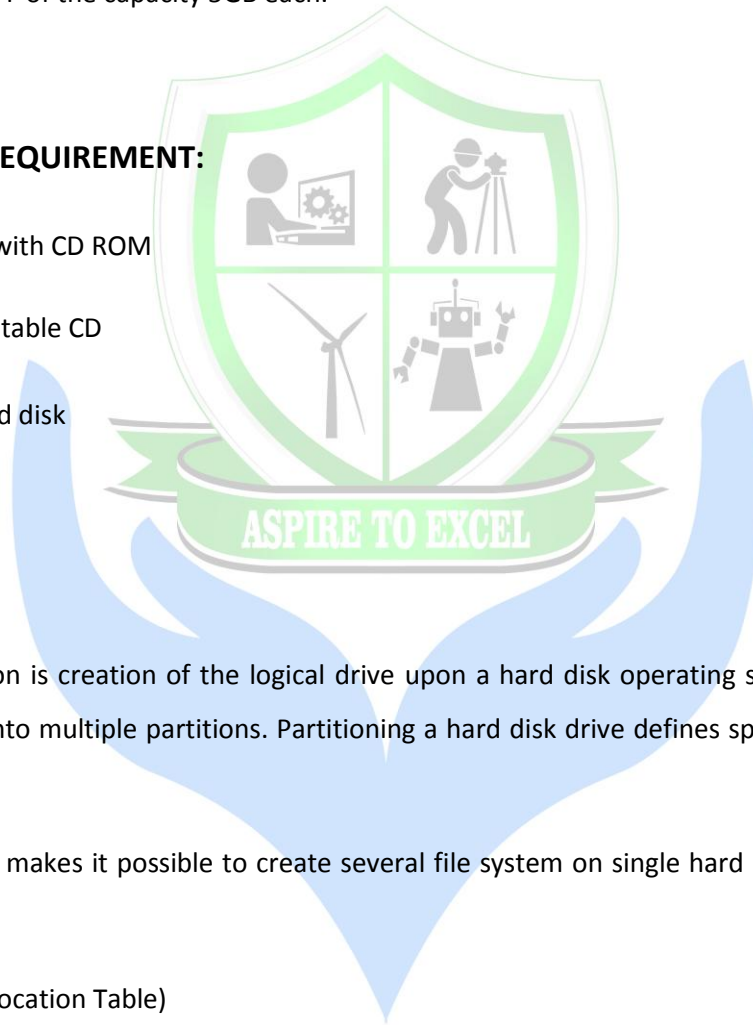
- PC with CD ROM
- Bootable CD
- Hard disk

### THEORY:

Disk partition is creation of the logical drive upon a hard disk operating system allow users to divide a hard disk into multiple partitions. Partitioning a hard disk drive defines specific area within the disk.

Partitioning makes it possible to create several file system on single hard disk. Some of the file systems used are

- FAT (File Allocation Table)
- VFAT (Virtual File Allocation Table)
- NTFS (New Technology File System)
- FAT32 (32bit)



A hard disk would contain either as many as four primary partitions or one to three partitions along with a single extended partition. Most of the operating system use “fdisk” command to create hard disk partition.

- **PRIMARY PARTITION**

A primary (or logical) partition contains one file system it may be NTFS or FAT file system. The first partition(C) must be a primary partition.

- **EXTENDED PARTITION**

An extended partition is secondary to the primary partition. A hard disk may contains only one extended partition which can then be sub-divided into logical drives each of which ,each extended partition is useful if you want more than 4partitions.

- **MICROSOFT WINDOWS PARTITION SCHEME**

With Microsoft windows, the standard partitioning scheme is to create a single active primary partition, the C: drive where the partition system user data so that the operating system can be stored separately from other data.

- **UNIX PARTITION**

The UNIX based and UNIX like operating system such as LINUX and MAC, OSX the creation of separate partition for boot,laser,swap and all remaining file under “/” is possible.

### **PROCEDURE**

- Switch on the PC and place the bootable Cd on CD -ROM.
- Run F disk from the command prompt; enter the command “FDISK”. If you have a disk large enough to warrant the use of FAT32 or N if you want to enable FAT32.
- Partition hard disk (Single partition).

- Select from the FDISK menu 1.create DOSPartition or logical DOS drive
- Select 1.create DOS partition FDISK will verify drive integrity. Then it will ask if you want to use the maximum available size.
- Press exit to exit FDISK.
- Partition hard disk (Multiple partition)
  - Select from FDISK menu 1.create DOS partition
  - Select 1.create DOS partition .please verifies the FDISK drive. Thenit will ask you to use the maximum size.
  - Enter the size of the primary partition in our example this would mean entering “1000”
  - Press ESC to return to FDISK.
  - Select 2. Set active partition .set partition1 to FDISK will report
  - Press ESC to return to FDISK menu.
  - Select from FDISK menu 1.create DOS partition.
  - Select 2.create extended partition.
  - When promoted press ESC to select the entire remaining of disk. FDISK will partition that it has created.
  - Press ESC. FDISK will automatically prompt you to create first logical DOS.
  - Enter the size of the first logical partition. In our example would enter “800”. First create the partition label it. Don’t touch anything just wait and FDISK will prompt.
  - Repeat the previous step for the remaining partitions when all the partitions to create when all the partitions are created FDISK will report.
  - Press ESC to exit FDISK.
- REBOOT

Reboot the system using either the reset button or (ctrl+alt+delete).note that you may get “invalid media type “.this is normal at this stage.

- **FORMAT PRIMARY PARTITION**

From the A: DOS port issues the following command.do not forgets the “/s” as this is used with make your PC. Since of course there is no data presently in the system will format the hard disk. The program will show the you its progress as it formats. Enter one if you wish.

- **FORMAT ADDITIONAL PARTION (if necessary)**

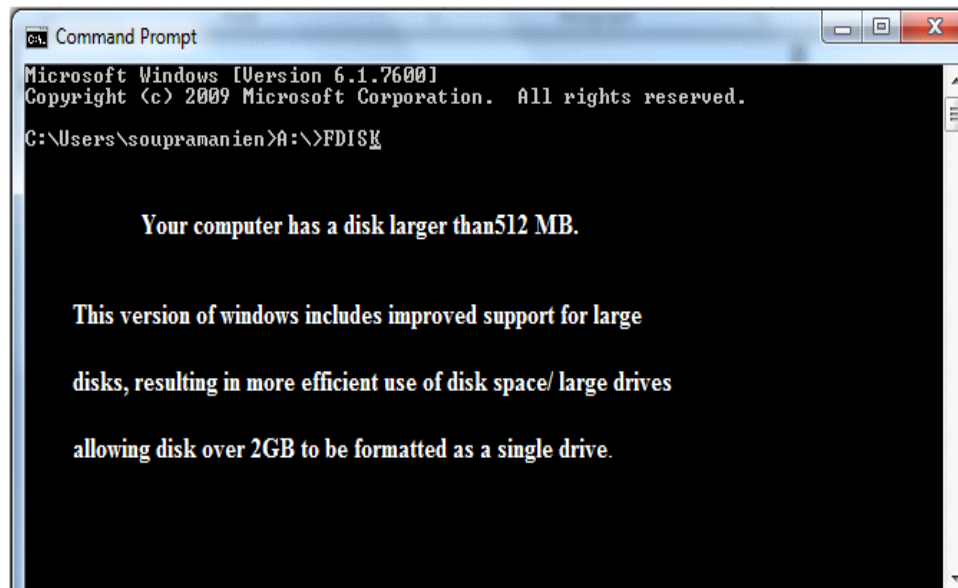
If you set up multiple partitions format the additional partition now. Except that you would be entering the format as in preceding step.

- **REMOVE BOOT CD**

Eject the boot CD from the drive.

- **AGAIN REBOOT**

Again reboot the system using the reset button. no device found at this stage this means you forget to set the DOS partition. Reboot from CD run from FDISK again and use the option to see the primary partition .if you get an error like “NO OS” this means you forgot the “/s” parameter when formatting C: drive. Put the CD drive back and return to step6.

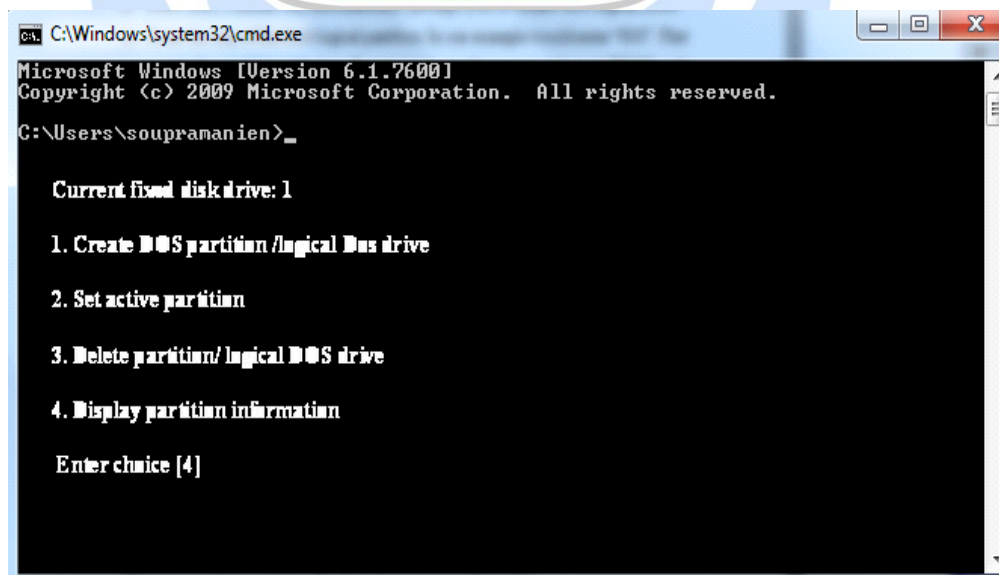
**OUTPUT SCREENSHOTS:****SCREEN 1: A:\>FDISK**A screenshot of a Windows Command Prompt window. The title bar reads 'Command Prompt'. The text inside shows the Windows version and copyright information, followed by the command 'A:\>FDISK'. The output of the command is a message about disk size support.

```
C:\> Command Prompt
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>A:\>FDISK

    Your computer has a disk larger than 512 MB.

    This version of windows includes improved support for large
    disks, resulting in more efficient use of disk space/ large drives
    allowing disk over 2GB to be formatted as a single drive.
```

**SCREEN 2: FDISK OPTIONS**A screenshot of a Windows Command Prompt window. The title bar reads 'C:\Windows\system32\cmd.exe'. The text inside shows the Windows version and copyright information, followed by the command 'C:\Users\soupramanien>\_'. The output of the command is a list of FDISK options.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>_

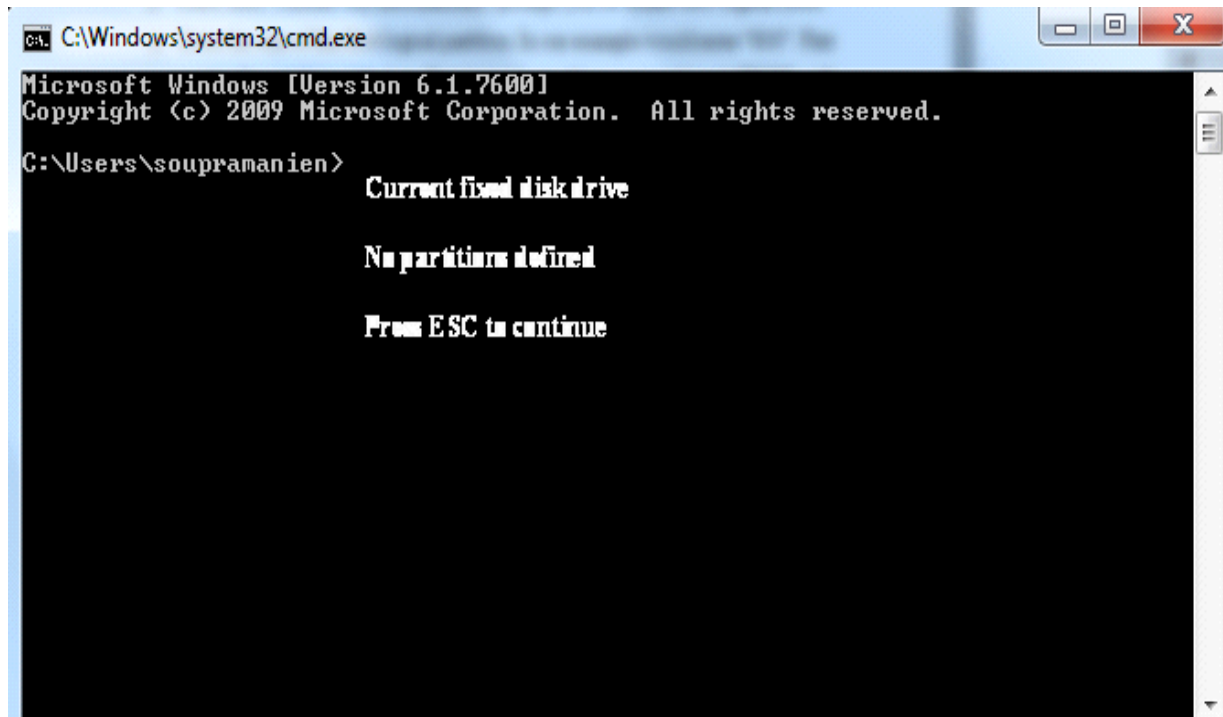
    Current fixed disk drive: 1

    1. Create DOS partition /logical Dos drive
    2. Set active partition
    3. Delete partition/ logical DOS drive
    4. Display partition information

    Enter choice [4]
```



## SCREEN 3: DISPLAY PARTITION INFORMATION



A screenshot of a Windows command prompt window titled "C:\Windows\system32\cmd.exe". The window shows the following text:

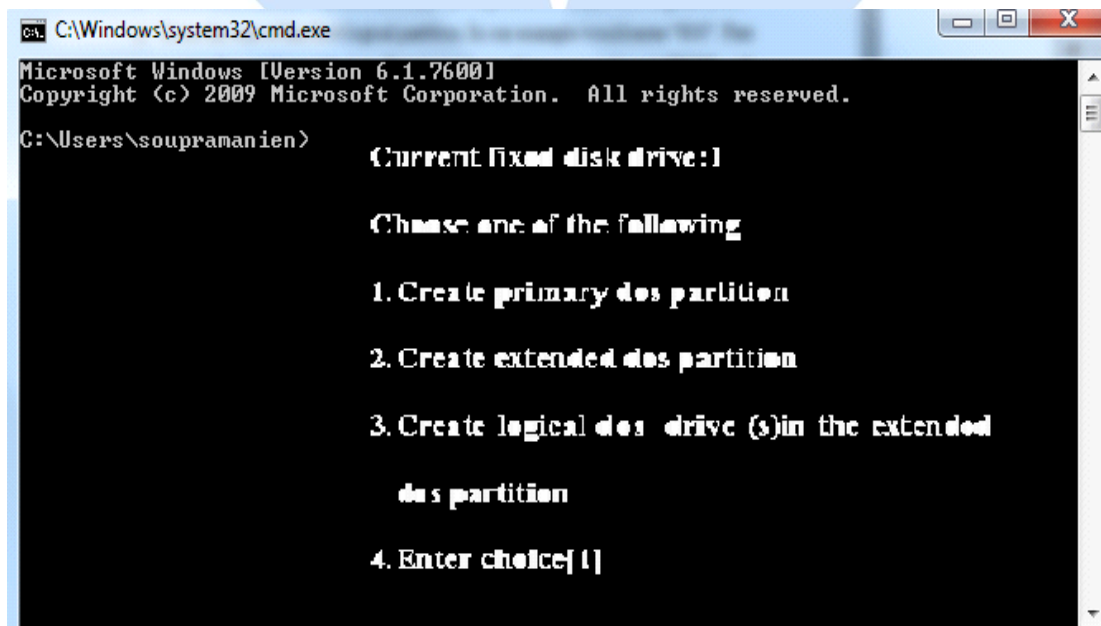
```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>
```

The prompt is followed by three lines of text:

```
Current fixed disk drive
No partitions defined
Press ESC to continue
```

## SCREEN 4: CREATE DOS PARTITION/LOGICAL DOS DRIVE



A screenshot of a Windows command prompt window titled "C:\Windows\system32\cmd.exe". The window shows the following text:

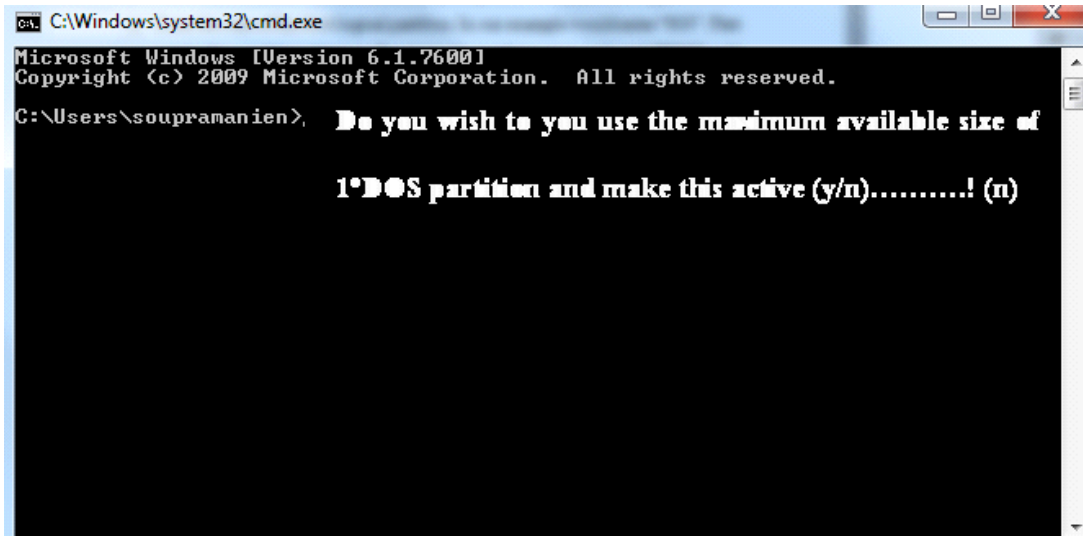
```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>
```

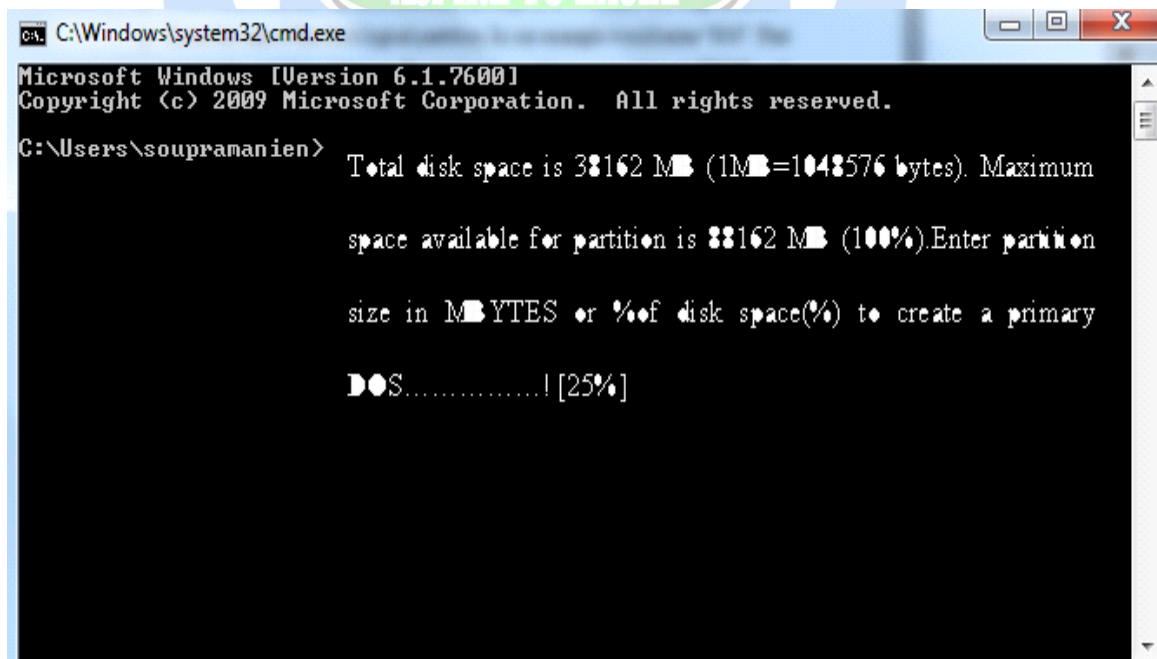
The prompt is followed by a series of instructions and options:

```
Current fixed disk drive:1
Choose one of the following
1. Create primary dos partition
2. Create extended dos partition
3. Create logical dos drive (s) in the extended
   dos partition
4. Enter choice[1]
```

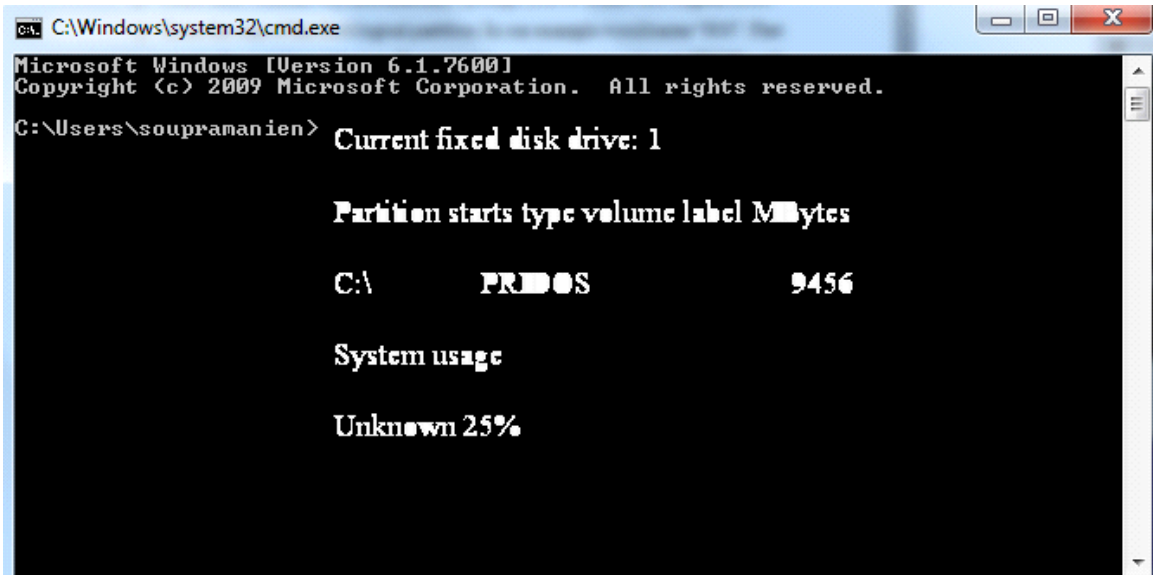
## SCREEN 5: CREATE PRIMARY DOS PARTITION



## SCREEN 6: TOTAL SPACE



## SCREEN 7: CREATE 1° DOS PARTITION



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien> fdisk

Current fixed disk drive: 1

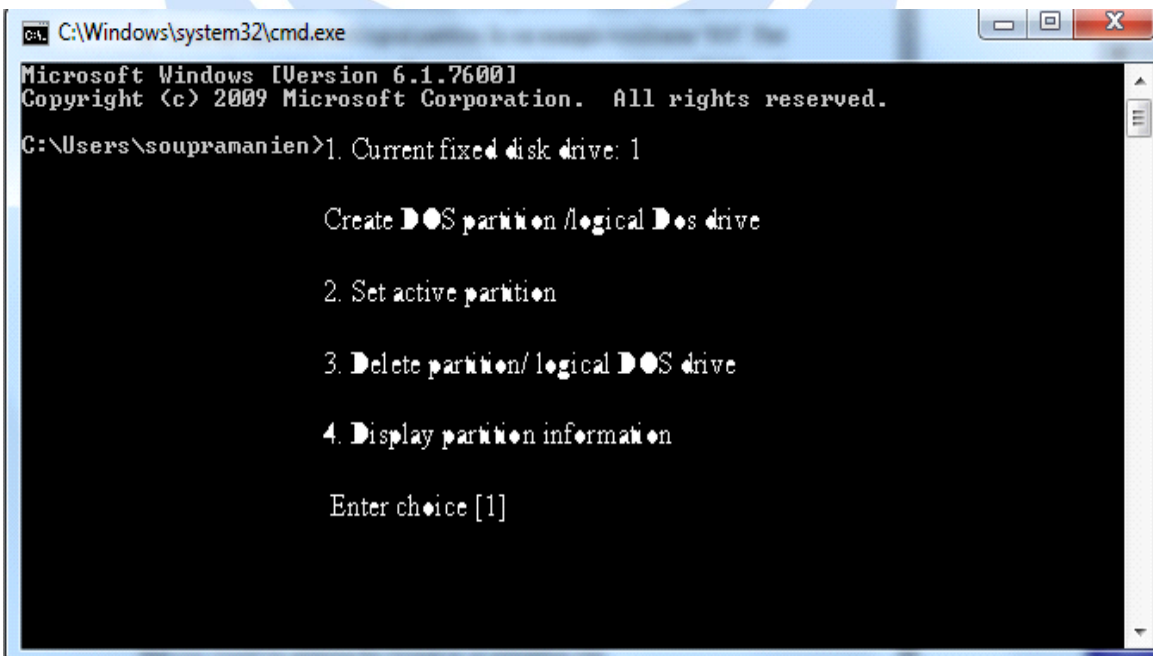
Partition starts type volume label MBytes

CA      PRDOS      9456

System usage

Unknown 25%
```

## SCREEN 8: FDISK OPTIONS



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien> fdisk

1. Current fixed disk drive: 1

Create DOS partition / logical Dos drive

2. Set active partition

3. Delete partition / logical DOS drive

4. Display partition information

Enter choice [1]
```

## SCREEN: 9 CREATE DOS PARTITION /LOGICAL DOS DRIVE

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien> Choose one of the following

1. Create 1 DOS partition
2. Create extended dos partition
3. Create logical DOS drives in extended DOS partition
Enter choice [2]
```

## SCREEN 10: CREATE EXTENDED DOS PARTITION

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

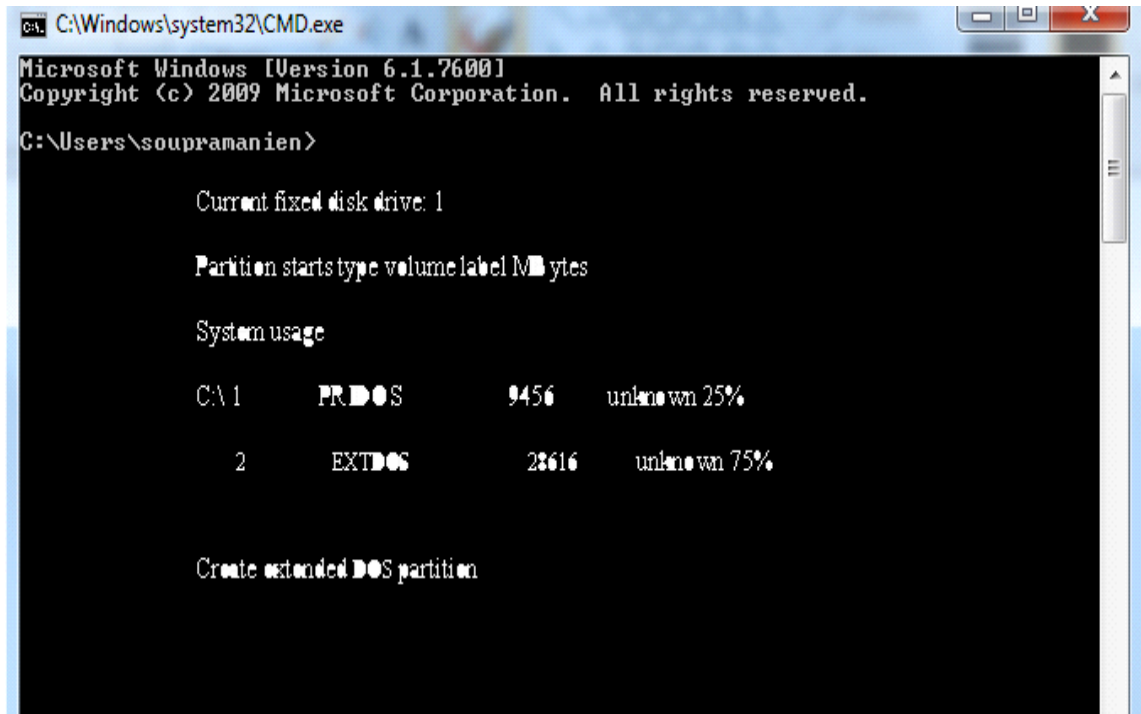
Current fixed disk drive: 1

Partition starts type volume label MBytes

System usage

C:\      PRDOS      9456      unknown 25%

Total disk space is 38162 MB (1MB=1048576 bytes). Maximum
space available for partition is 28162 MB (75%). Enter partition size in
MBYTES or % of disk space (%) to create a primary DOS.....!
[75%]
```

**SCREEN 11: CREATE EXTENDED DOS PARTITION**

A screenshot of a Windows Command Prompt window titled "C:\Windows\system32\CMD.exe". The window shows the following text:

```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Current fixed disk drive: 1

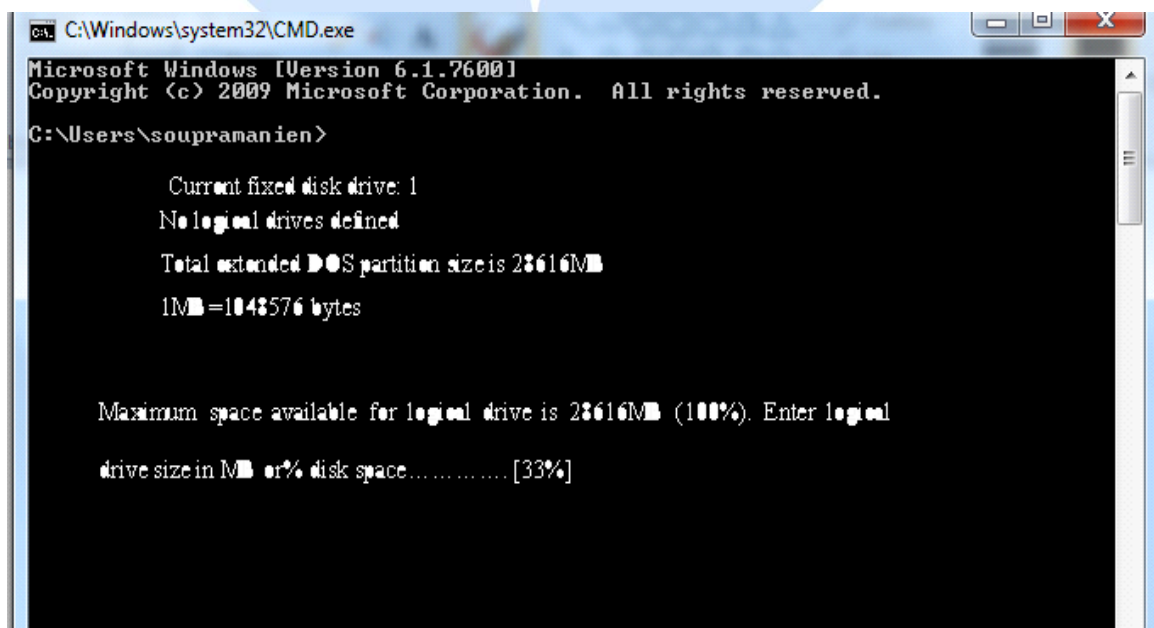
Partition starts type volume label M bytes

System usage

CA 1      PRDOS      9456    unknown 25%

      2      EXTDOS      28616    unknown 75%

Create extended DOS partition
```

**SCREEN 12: CREATE LOGICAL DRIVES IN EXTENDED DOS PARTITION**

A screenshot of a Windows Command Prompt window titled "C:\Windows\system32\CMD.exe". The window shows the following text:

```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Current fixed disk drive: 1
No logical drives defined
Total extended DOS partition size is 28616MB
1MB=1048576 bytes

Maximum space available for logical drive is 28616MB (100%). Enter logical
drive size in MB or % disk space..... [33%]
```



**SCREEN 13: CREATE LOGICAL DRIVES IN EXTENDED DOS PARTITION**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\soupramanien>

Drive volume label MB system usage

D:          9444

E:          9444

Total extended DOS partition size is 28616MB. Maximum space
available for DOS is 9727MB (34%)

Enter logical drive size in MBYTES or % of disk space (%) .....9727

Logical dos drive created, drive letters changed/added
```

**SCREEN 14: CREATE LOGICAL DOS DRIVES IN EXTENDED DOS PARTITION**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\soupramanien>

Drive volume label MB system usage

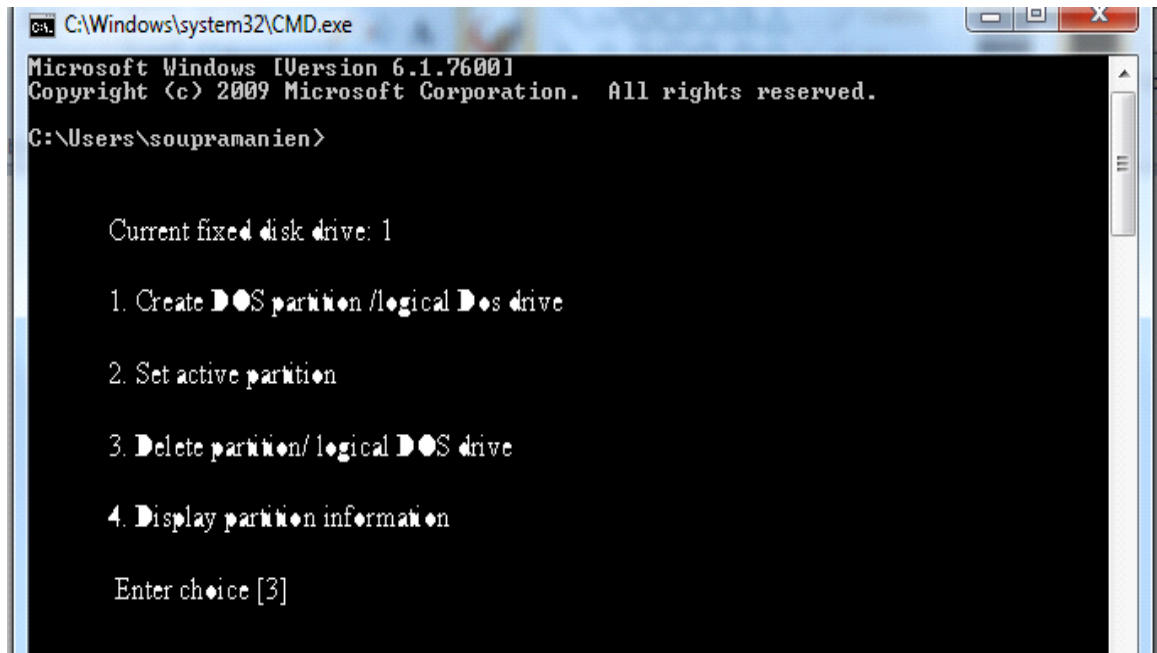
D:          9444      unknown  33%

E:          9444      unknown  33%

F:          9444      unknown  34%

All available space is extended DOS partition is assigned to logical drive
```

## SCREEN: 15 FDISK OPTION



```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

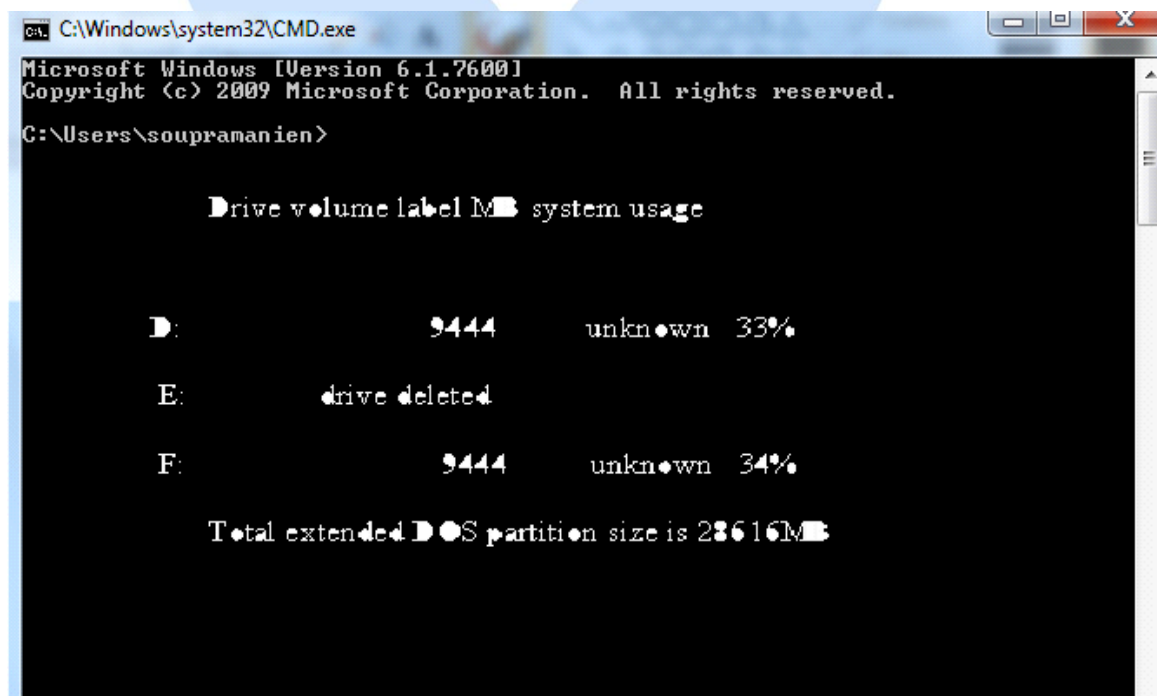
C:\Users\soupramanien>

Current fixed disk drive: 1

1. Create DOS partition / logical Dos drive
2. Set active partition
3. Delete partition / logical DOS drive
4. Display partition information

Enter choice [3]
```

## SCREEN 16: DELETED LOGICAL DRIVES IN EXTENDED DOS PARTITION



```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Drive volume label MB system usage

D:          9444      unknown  33%
E:          drive deleted
F:          9444      unknown  34%

Total extended DOS partition size is 28616MB
```

**SCREEN 17: DELETE LOGICAL DRIVES IN EXTENDED DOS PARTITION**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Drive volume label MB system usage

D:          9444      unknown  33%
E:          drive deleted
F:          9444      unknown  34%
```

**SCREEN: 18 FDISK OPTION**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Current fixed disk drive: 1

1. Create DOS partition / logical Dos drive
2. Set active partition
3. Delete partition / logical DOS drive
4. Display partition information

Enter choice [3]
```

**SCREEN 19: FDISK OPTIONS**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>_

Current fixed disk drive: 1

Partition starts type volume label MBytes

System usage

C:\ 1      PRDOS      9456      unknown 25%

      2      EXTDOS      28616      unknown

75%

Total disk space is 38612MB

Enter no. of partitions you want active [1]
```

**SCREEN 20: SET ACTIVE PARTITION**

```
C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\soupramanien>

Current fixed disk drive: 1

Partition starts type volume label MBytes

System usage

C:\ 1      PRDOS      9456      unknown 25%

      2      EXTDOS      28616      unknown 75%

Total disk space is 38612MB

Partition is 1 → made active
```

**RESULT:**

## INSTALLATIONWINDOWS XP

### AIM:

To study the installation of the Operating System in Hard Disk Drive. (**Windows-XP**)

### COMPONENTS REQUIRED:

The minimum hardware requirements for Windows XP Home Edition are:

- Pentium 233-megahertz (MHz) processor or faster (300 MHz is recommended)
- At least 64 megabytes (MB) of RAM (128 MB is recommended)
- At least 1.5 gigabytes (GB) of available space on the hard disk
- CD-ROM or DVD-ROM drive
- Keyboard and a Microsoft Mouse or some other compatible pointing device
- Video adapter and monitor with Super VGA (800 x 600) or higher resolution
- Sound card
- Speakers or headphones

### SOFTWARE REQUIREMENTS:

- Windows XP Service Pack 2 or 3.

### PROCEDURE:

This procedure demonstrates how to install Windows XP Professional. The procedure to install Windows XP home edition is very similar to the professional edition. Since Windows XP Pro is more advanced operating system, it will be used to demonstrate the installation procedure.

The best way install Windows XP is to do a clean install. It is not difficult to perform a clean installation. Before you perform the installation I recommend that you check Windows XP Compatibility List to ensure that your hardware is supported by XP. If your hardware is not on



the compatibility list you can check your hardware manufactures website to download the drivers for Windows XP. Save all the necessary drivers onto floppy disks or CD before you start the installation.

All versions of Windows XP CD are bootable. In order to boot from CD/DVD-ROM you need to set the boot sequence. Look for the boot sequence under your BIOS setup and make sure that the first boot device is set to CD/DVD-ROM. You can then perform the following steps to install Windows XP:

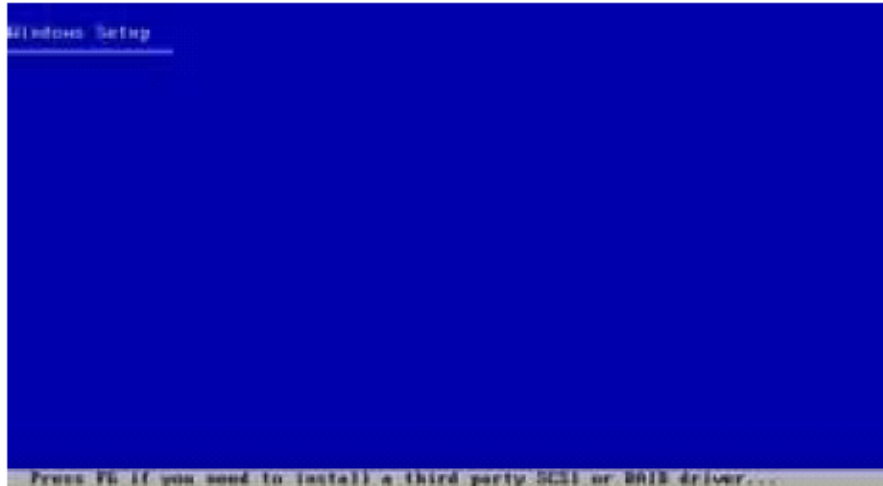
**Step 1** - Start your PC and place your Windows XP CD in your CD/DVD-ROM drive. Your PC should automatically detect the CD and you will get a message saying "Press any key to boot from CD". Soon as computer starts booting from the CD you will get the following screen:



**Step 2** - At this stage it will ask you to press F6 if you want to install a third party Raid or SCSI driver. If you are using a an IDE Hard Drive then you do not need to press F6. If you are using a

SCSI or SATA Hard drive then you must press F6 otherwise Windows will not detect your Hard

Drive during the installation. Please make sure you have the Raid drivers on a floppy disk. Normally the drivers are supplied on a CD which you can copy to a floppy disk ready to be installed.



**Step 3** - Press S to Specify that you want to install additional device.



**Step 4** - You will be asked to insert the floppy disk with the Raid or SCSI drivers. Press enter after you have inserted the disk.



**Step 5** - You will see a list of Raid drivers for your HDD. Select the correct driver for your device and press enter.



**Step 6** - You will then get a Windows XP Professional Setup screen. You have the option to do a new Windows install, Repair previous install or quit. Since we are doing a new install we just press Enter to continue.



**Step 7** - You will be presented with the End User Licensing Agreement. Press F8 to accept and Continue.



**Step 8** - This step is very important. Here we will create the partition where Windows will be installed. If you have a brand new unformatted drive you will get a screen similar to below. In our case the drive size is 8190MB. We can choose to install Windows in this drive without creating a partition, hence use the entire size of the drive. If you wish to do this you can just press enter and Windows will automatically partition and format the drive as one large drive. However for this demonstration I will create two partition. The first partition will be 6000MB (C: drive) and second partition would be 2180MB (E: drive). By creating two partition we can have one which stores Windows and Applications and the other which stores our data.

Press C to create a partition.



**Step 9** - Windows will show the total size of the hard drive and ask you how much you want to allocate for the partition you are about to create. I will choose 6000MB. You will then get the screen below. Notice it shows C: Partition 1 followed by the size 6000 MB. This indicates the partition has been created. We still have an unpartitioned space of 2189MB. Next highlight the unpartitioned space by pressing down the arrow key. Then press C to create another partition.

You will see the total space available for the new partition. Just choose all the space left over, in our case 2180MB.





**Step 10** - Now you will see both partition listed. Partition 1 (C: Drive) 6000MB and Partition 2 (E: Drive) 2180MB. You will also have 8MB of unpartitioned space. Don't worry about that. Just leave it how its is. Windows normally has some unpartitioned space. You might wonder what happened to D: drive. Windows has automatically allocated D: drive to CD/DVD-ROM. Select Partition 1 (C: Drive) and press Enter.



**Step 11** - Choose format the partition using NTFS file system. This is the recommended file system. If the hard drive has been formatted before then you can choose quick NTFS format. We chose NTFS because it offers many security features, supports larger drive size, and bigger size files.



- Windows will now start formatting drive C: and start copying setup files as shown on the two images below :





**Step 12** - After the setup has completed copying the files the computer will restart. Leave the XP CD in the drive but this time DO NOT press any key when the message "Press any key to boot from CD" is displayed. In few seconds setup will continue. Windows XP Setup wizard will guide you through the setup process of gathering information about your computer.



Exp. No.:

Date :

**Step 13** - Choose your region and language.



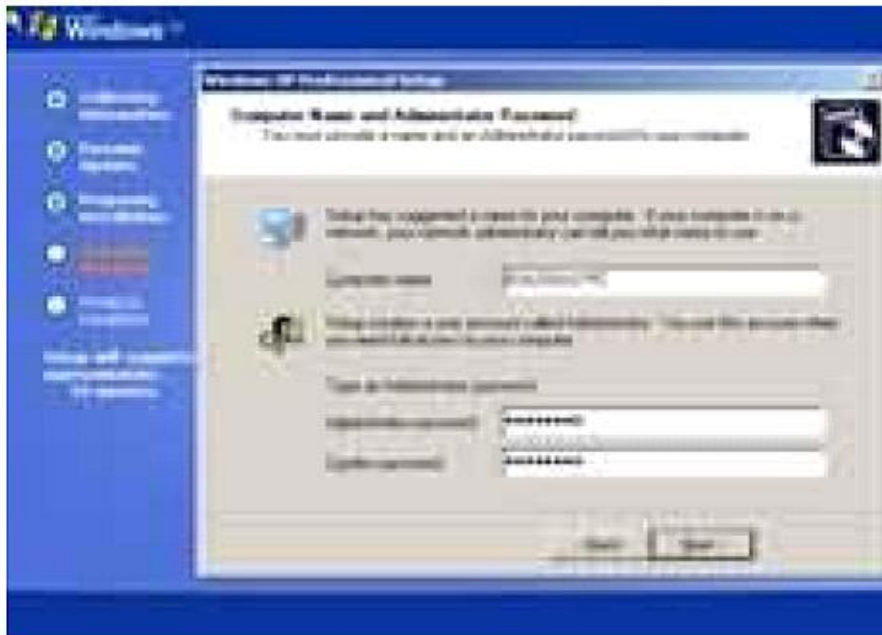
**Step 14** - Type in your name and organization.



**Step 15.** Enter your product key.



**Step 16** - Name the computer, and enter an Administrator password. Don't forget to write down your Administrator password.





**Step 17** - Enter the correct date, time and choose your time zone.



**Step 18** - For the network setting choose typical and press next.





**Step 19** - Choose workgroup or domain name. If you are not a member of a domain then leave the default settings and press next. Windows will restart again and adjust the display.



**Step 20** - Finally Windows will start and present you with a Welcome screen. Click next to continue.



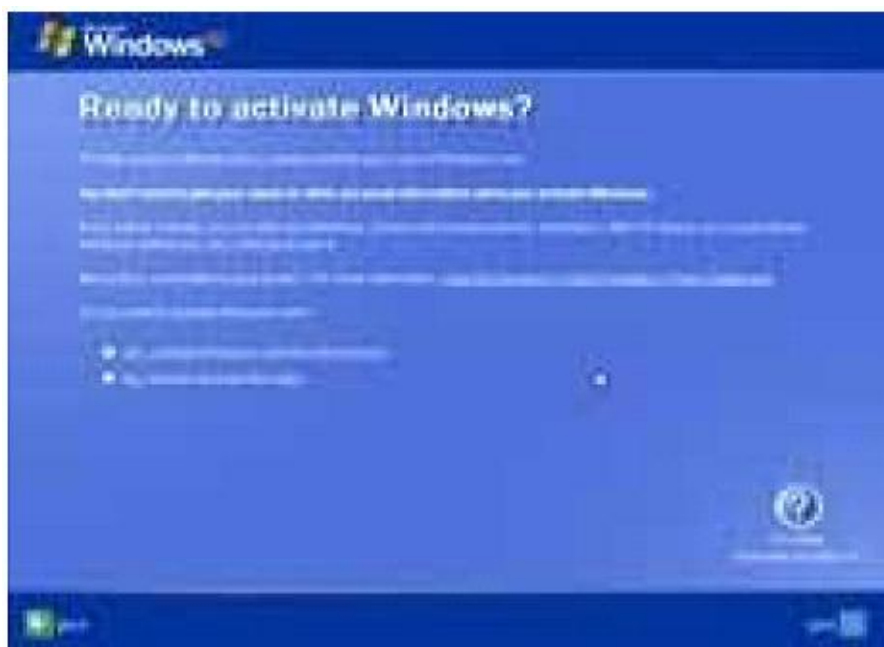
**Step 21** - Choose '*help protect my PC by turning on automatic updates now*' and press next.



**Step 22** - Will this computer connect to the internet directly, or through a network? If you are connected to a router or LAN then choose: 'Yes, this computer will connect through a local area network or home network'. If you have dial up modem choose: 'No, this computer will connect directly to the internet'. Then click Next.



**Step 23** - Ready to activate Windows? Choose yes if you wish to activate Windows over the internet now. Choose no if you want to activate Windows at a later stage.



ASPIRE TO EXCEL

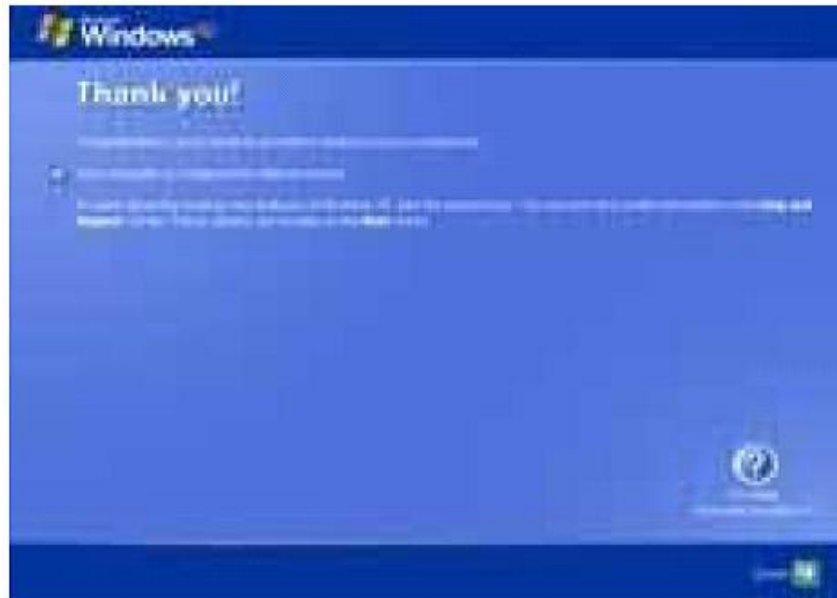
**Step 24** - Add users that will sign on to this computer and click next.



Exp. No.:

Date :

**Step 25** - You will get a Thank you screen to confirm setup is complete. Click finish.



**Step 26** - Log in, to your PC for the first time.



**RESULT:**

## INSTALLATION OF WINDOWS 7

### AIM:

To study the installation of the Operating System in Hard Disk Drive. (**Windows7**)

### COMPONENTS REQUIRED:

The minimum hardware requirements for Windows 7 Home Edition are:

- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
- 1 GB RAM (32-bit) or 2 GB RAM (64-bit)
- 16 GB available disk space (32-bit) or 20 GB (64-bit) -- just for the OS, not applications or data files
- DirectX 9 graphics processor with Windows Display Driver Model (WDDM) 1.0 or higher

### SOFTWARE REQUIREMENTS :

- Windows7 Software

### PROCEDURE:

This procedure demonstrates how to install Windows 7. The procedure to install Windows 7 home edition is very similar to the professional edition. Since Windows 7 is more advanced operating system, it will be used to demonstrate the installation procedure.

The best way install Windows 7 is to do a clean install. It is not difficult to perform a clean installation. Before you perform the installation I recommend that you check Windows 7 Compatibility List to ensure that your hardware is supported by 7. If your hardware is not on

the compatibility list you can check your hardware manufactures website to download the driversfor Windows 7 . Save all the necessary drivers onto floppy disks or CD before you start the installation.

## **Installing Windows 7 - Step by step & preparations**

### **Backup**

You may be installing Windows 7 on a machine that already has an operating system installed. In that case, you will have to consider what to do with existing data on the disk.

You may want to completely wipe the existing data and start clean. Or you may want to incorporate Windows 7 into the existing setup, whether as a side-by-side installation or an upgrade. Whatever you choose, please make sure your files are safely backed up, so that you do not accidentally, irrecoverably overwrite critical data during the installation.

### **Installation key**

Please make sure you have the Windows 7 installation key available. Without it, you will not be able to install the operating system.

### **Drivers for the computer hardware**

There is no guarantee that Windows 7 built-in set of drivers will include your specific hardware. Therefore, please make sure you have the right drivers available before you start the installation. The drivers usually come on CD/DVDs supplied by the manufacturer with newly purchased hardware. Alternatively, you may also download them from official vendor websites. Having the drivers available will make sure that after you have installed Windows 7, your system will perform to its fullest. If you meet the above three requirements, we are ready to go.

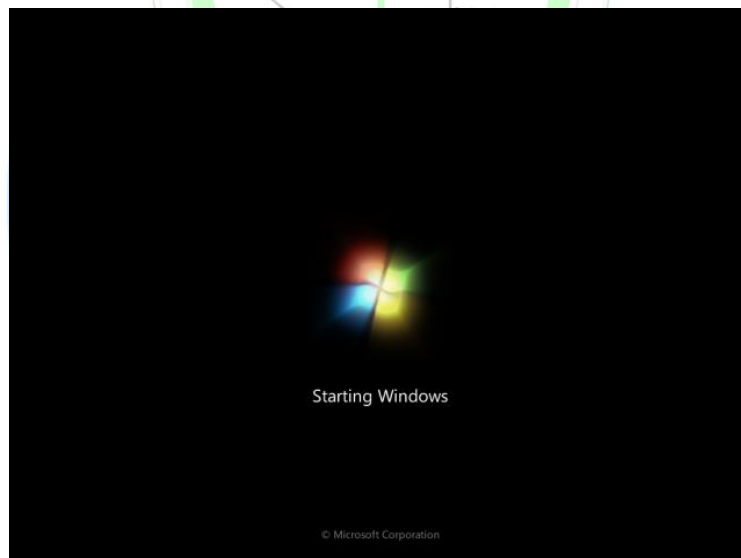
### **Boot from Windows 7 DVD**

The first step is to place your Windows 7 DVD into the DVD tray and boot the machine. Your computer needs to be configured to boot from DVD. This is done via BIOS. On most computers, the BIOS menu can be accessed by pressing either the F2 or Del keys while the machine is booting.





Once you have completed this stage, Windows 7 will start loading. If you see the below image, you're doing well so far.



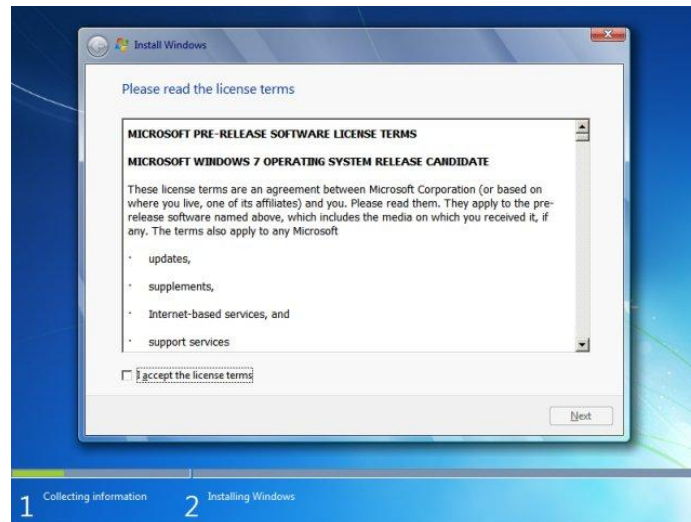
After a few moments, you will reach the installation menu. Your first step is to choose the language and the keyboard.



You will be now taken to the Install now menu. We have already prepared for the installation, so you can click Install now and proceed.

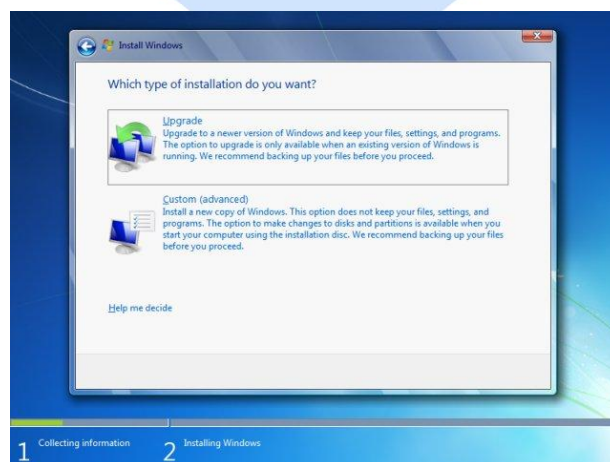


The next step is to accept the license agreement.



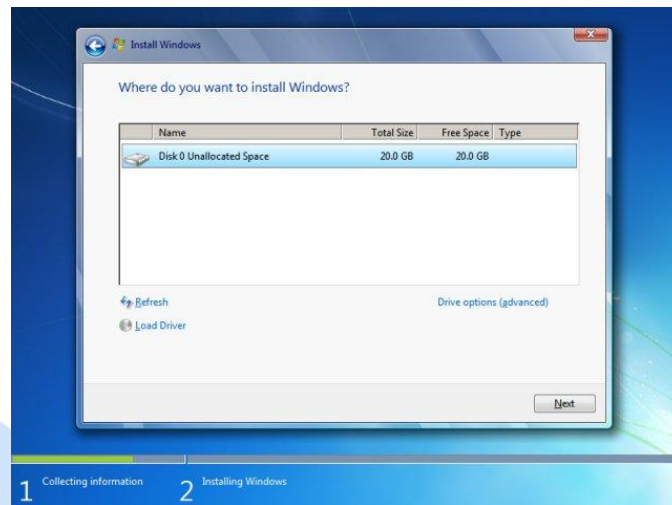
After this, you will have to decide whether you want to Upgrade an existing installation or perform a Custom (advanced) installation, which is basically creating a new copy of Windows.

We will discuss multiple boots in a separate tutorial. For now, if you are interested, you may want to explore a [Dual boot](#) tutorial that tackles this issue from the Linux side, with a Linux distribution being installed alongside Windows XP. In the soon-to-come multiple-boot tutorial, I will address the installation of Windows 7 alongside other Windows (XP and 7), as well as Linux. Personally, I recommend you install a new copy. Fresh installations are always better. Your machine starts in a pristine state and does not rely on old leftovers.



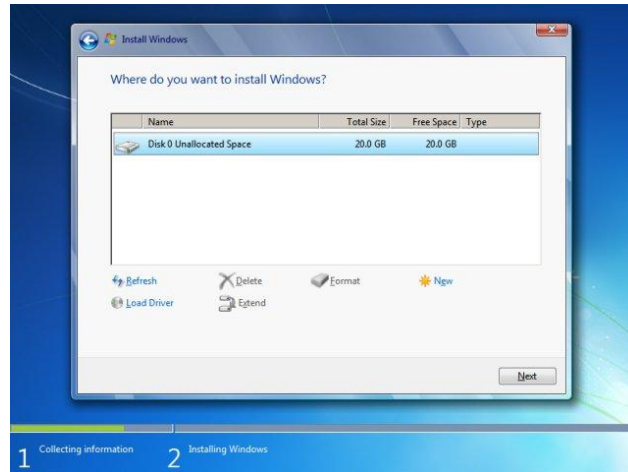
## Partitioning

The next step is to choose where you want to install Windows 7. This is probably the most important part of the entire installation, so you need to be very careful here and make the right choices.



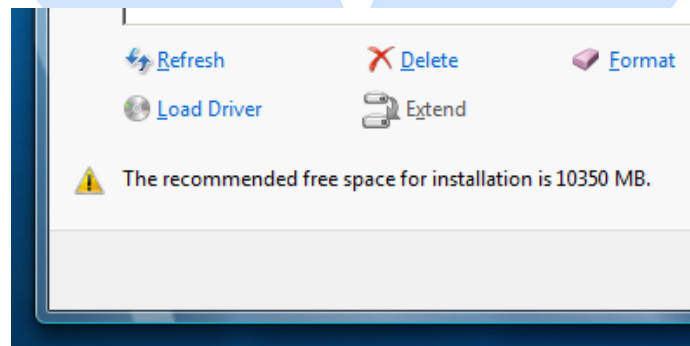
We only have a 20GB unallocated space on our disk, so we have no dilemma. However, it is possible that you may have other partitions from previous installations present, or you may have created a custom partitioning setup before starting Windows 7 installation using a third-party partitioning software, like [GParted](#). We will soon this discuss in greater detail. For now, let us create our Windows 7 partitions.

Inexperienced users can simply highlight the unallocated space and click Next. The partitioning layout will be created for them. However, we want to explore additional features. To this end, we need to expand the Drive options (advanced).

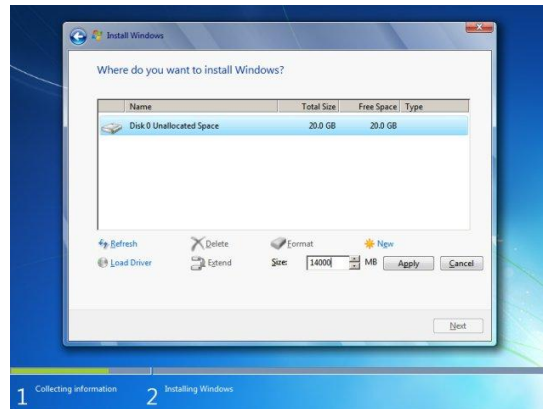


You now have the option to create new partitions, format them with a desired filesystem, change the size of existing or newly created partition (Extend), or delete them. The Load Driver function is usually necessary if you want to create more complex setups like RAID, but this is currently beyond the scope of this tutorial.

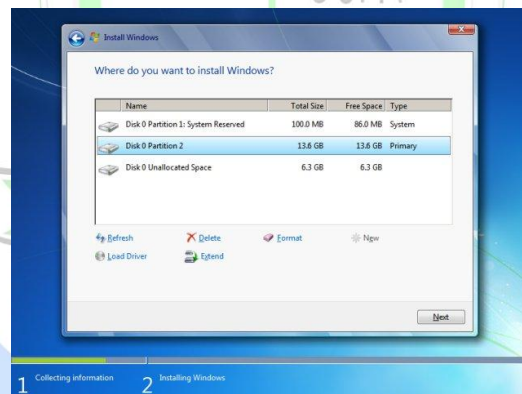
We will create a new partition. According to official system requirements, Windows 7 needs 16GB of free space. However, you can do with less. The minimum recommended space for a partition where you want to place Windows 7 is 10350MB. Eventually, the installation itself will take approx. 7GB. Just for your information, here's a snippet of what would happen if you try to install Windows 7 on a partition that does not meet the minimum expected size limit:



This does not mean your installation won't succeed. It might, but why risk it? We will create a 14GB partition:

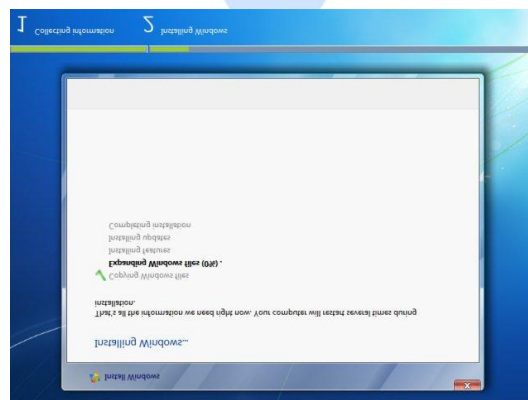


Windows 7 installer will now tell you that it will have to create an additional partition for the core system files. This will be a small primary partition ahead of your newly created one.



## Begin installation

If you're comfortable with your setup, highlight the created partition and click Next. Windows 7 will be installed to this partition. Depending on your hardware, this can take some time. My testing shows approx. 30-40 minutes.

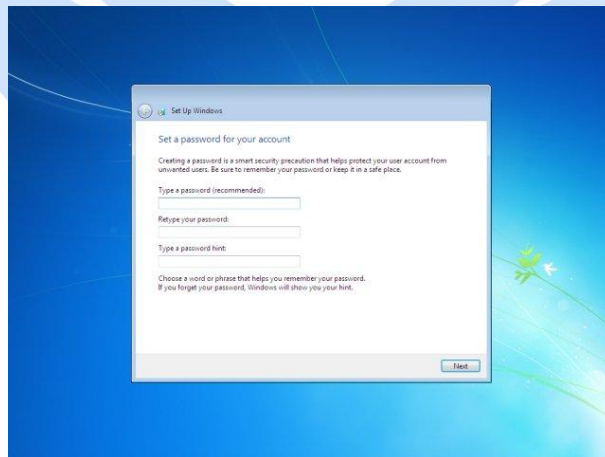
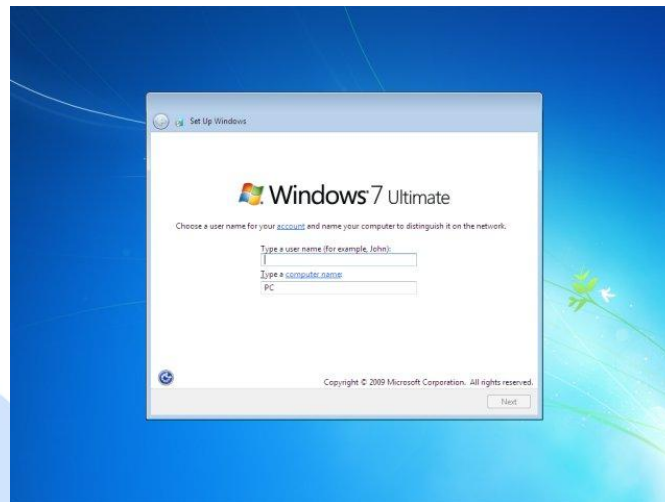




During the installation, your computer may restart several times. Let it be.

## User settings

Eventually, you will be asked to provide your username and a computer name. You will also have to password-protect your account. This is most advisable. You should opt for a strong password.

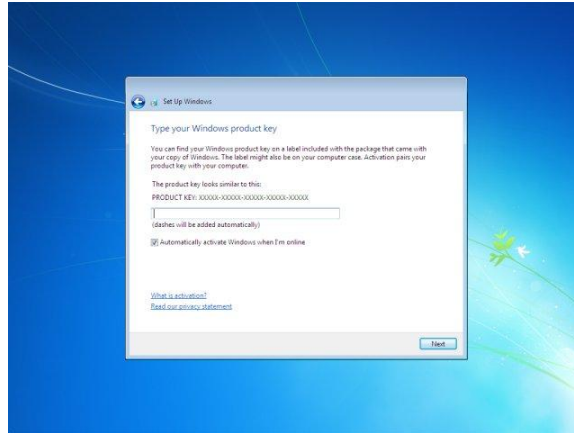


## Activation

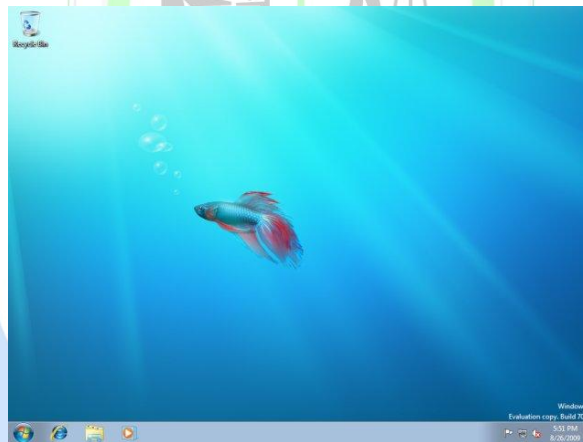
The next step is to activate your Windows. Grab your key and type it here.

Exp. No.:

Date :



Congratulations, you have just successfully installed Windows 7.



**RESULT:**

## INSTALLATION OF LINUX KERNAL

### AIM:

To write about Ubuntu and to install Ubuntu 9.04 direct boot option in a windows XP installed version

### COMPONENTS REQUIREMENTS:

- Ubuntu 9.04 OS Installer CD.
- DVD drive.
- Intel dual core PC [XP installed].
- Keyboard/Mouse
- HD space 40 GB [minimum].

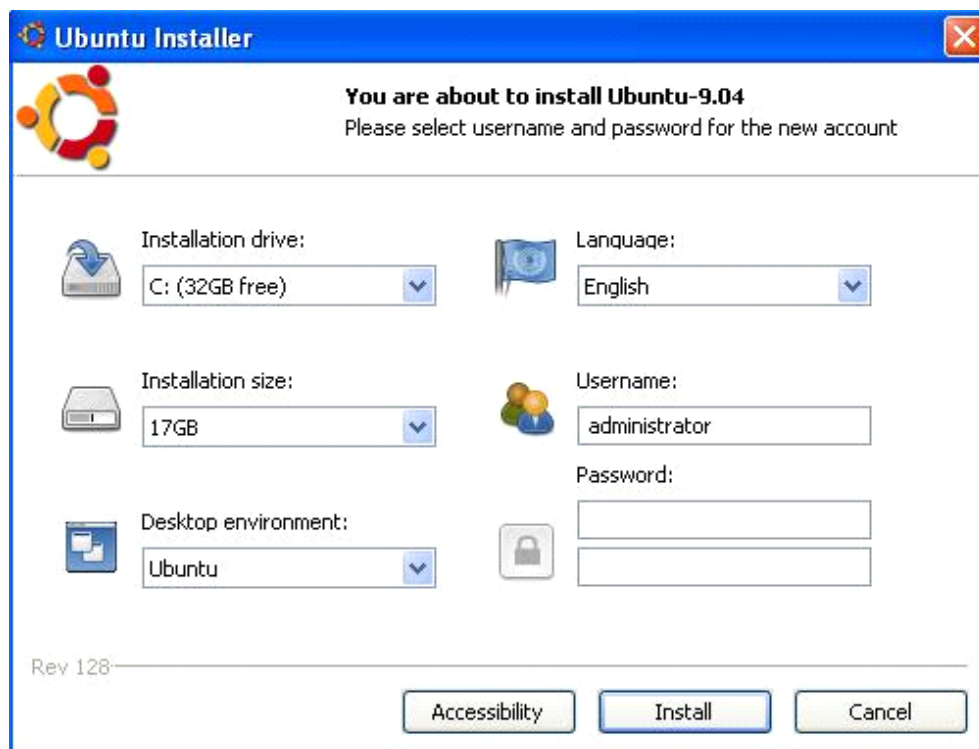
### UBUNTU:

Ubuntu is one among the open source Linux OS; others are SOLARIS etc. It was originally made for people of south Africa [SA] and later released worldwide. There were 3 types of installation available in Ubuntu.

- Live OS
- Complete installation
- Install as application.

**PROCEDURE:**

- Insert Ubuntu DVD into the hard disk drive.
- Select Autorun and dialog box pops up with Ubuntu menu as shown in the figure screen 1
- There will be 3 options present in the Ubuntu Menu. Select the 2<sup>nd</sup> option 'Install Inside Windows'.
- After selecting the option another dialog box appears to install Ubuntu 9.04 as shown in screen 2.
- In that box, select the required drive to install with a minimum free space [17 GB].
- Next choose the desktop environment as Ubuntu and select the required language.
- Please add the username and password to proceed Ubuntu installation and select 'Install'.
- After selecting install, extraction process begins as shown in figure screen 3.
- The extraction process copies the Ubuntu files in HD and wait until extraction is complete.
- After extraction the system automatically reboots and a dialog window appears to choose the OS. [windows XP and Ubuntu ] as shown in screen 4.
- The original installation takes place after selecting Ubuntu and wait for a long period of time.
- After installation, the Ubuntu logon screen appears and username, password should be given to proceed.
- We can work Ubuntu in two modes.
  - GUI mode [as shown in screen 6].
  - Command mode [as shown in screen 7].
- Thus we can switch between the modes by pressing Ctrl + Alt + F1 [command mode] and Ctrl + alt + F7 [GUI mode].



**Ubuntu Installer**

**You are about to install Ubuntu-9.04**  
Please select username and password for the new account

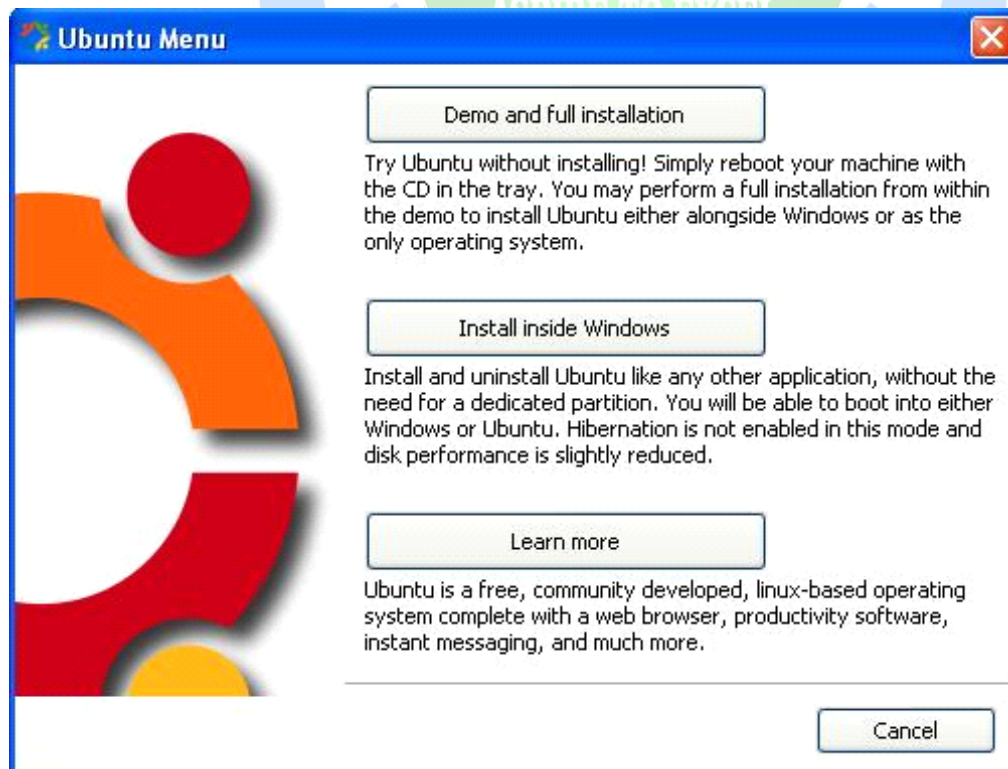
Installation drive: C: (32GB free) Language: English

Installation size: 17GB Username: administrator

Desktop environment: Ubuntu Password:

Rev 128

Accessibility Install Cancel



**Ubuntu Menu**

Demo and full installation

Try Ubuntu without installing! Simply reboot your machine with the CD in the tray. You may perform a full installation from within the demo to install Ubuntu either alongside Windows or as the only operating system.

Install inside Windows

Install and uninstall Ubuntu like any other application, without the need for a dedicated partition. You will be able to boot into either Windows or Ubuntu. Hibernation is not enabled in this mode and disk performance is slightly reduced.

Learn more

Ubuntu is a free, community developed, linux-based operating system complete with a web browser, productivity software, instant messaging, and much more.

Cancel

## INSTALLATION OF APPLICATION SOFTWARE-DRIVER SOLUTION

### AIM:

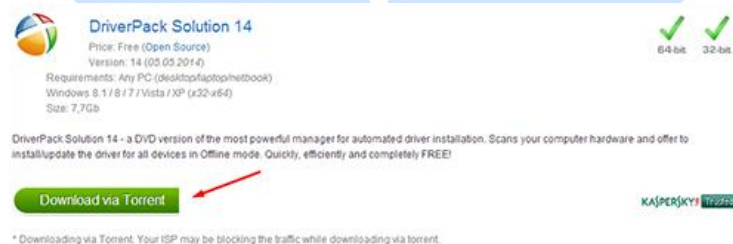
To study the installation of the Application software (Driver solution).

### COMPONENTS REQUIRED:

- Driver Pack solution
- OS
- Internet Connection

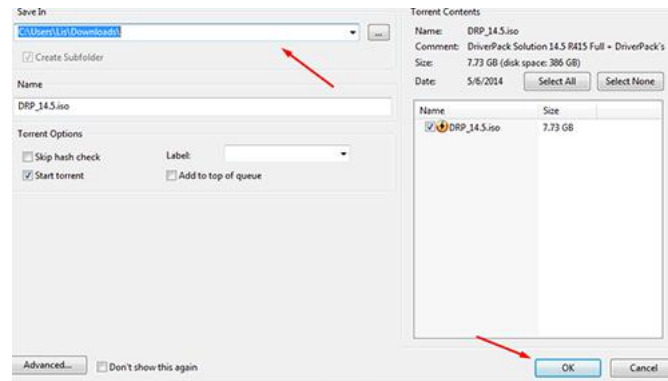
### PROCEDURE:

1. Download Driver Pack Solution and select the latest Torrent .ISO version that includes all the drivers, works 90% of the times. when you're in the download page you click on the second option that says Download via Torrent so this means you need a torrent client to download it.

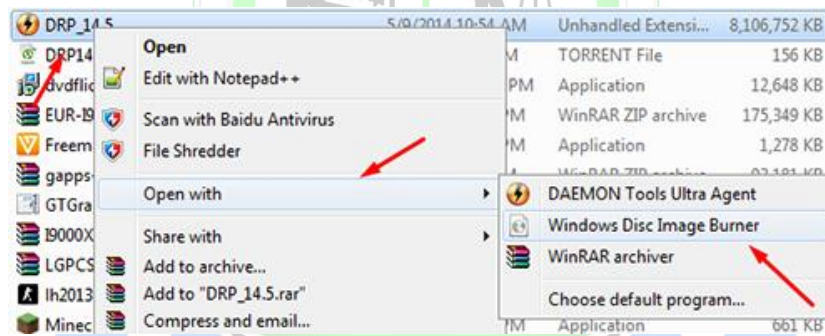


2. After the downloading the torrent file click on it open the file and if you installed the torrent client mentioned on step 1 it will automatically open it and you will need to select the downloading location for saving and press OK.

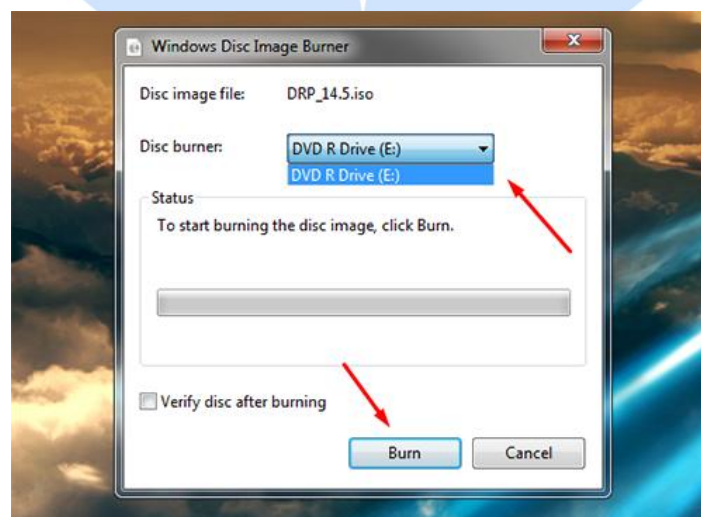




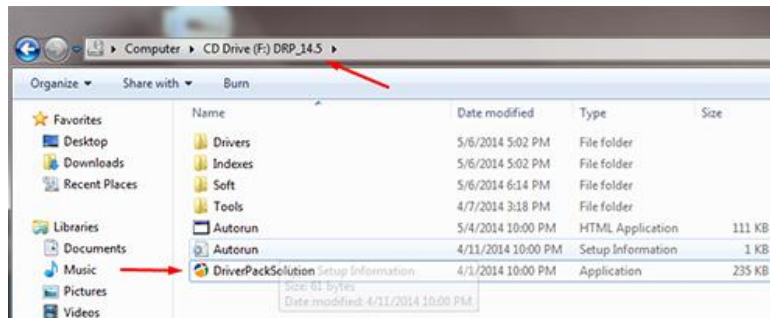
3. When the download is completed go to your download location to find the downloaded file, then right click on it and click on Open with and select Windows Disk Image Burner.



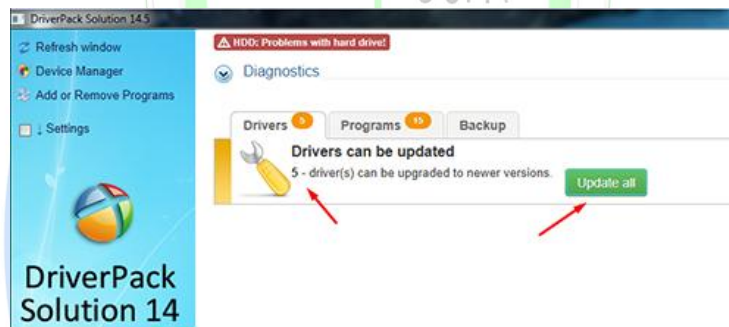
4. Insert a blank DVD with at least 8gb available, select the drive with that DVD inserted and click on Burn to start copying all the files to that blank DVD.



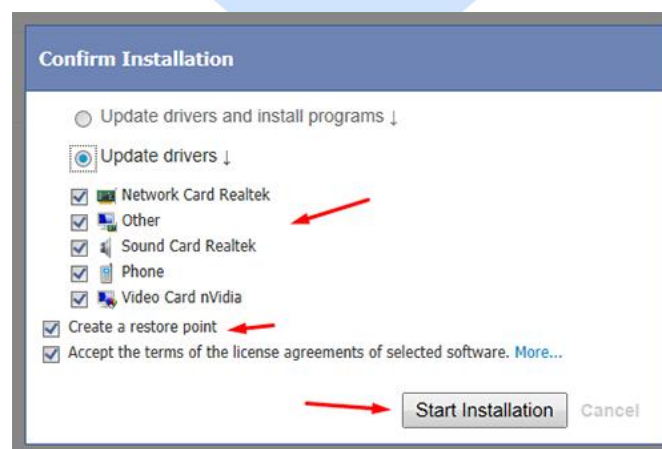
5. When it's burned, re-insert your DVD, open it and double click on DriverpackSolution.exe.



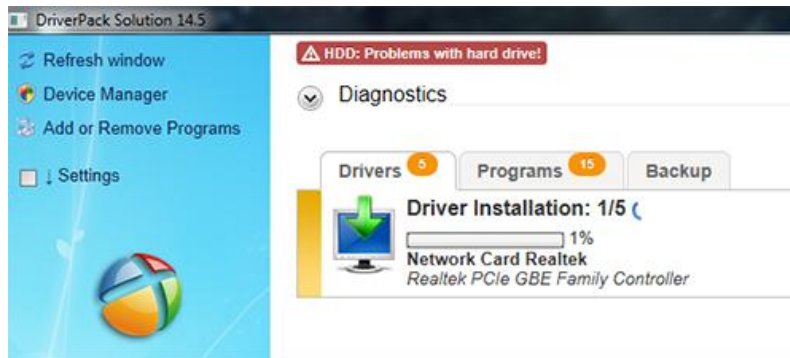
6. When it's opened you can see if any driver needs to be updated/installed, to complete that action you can click on the Update all button on the right.



7. After clicking Update all you can select which drivers you want to update/install and if you want to create an restore point (is recommended creating one just in case something goes wrong) and then click on Start Installation.



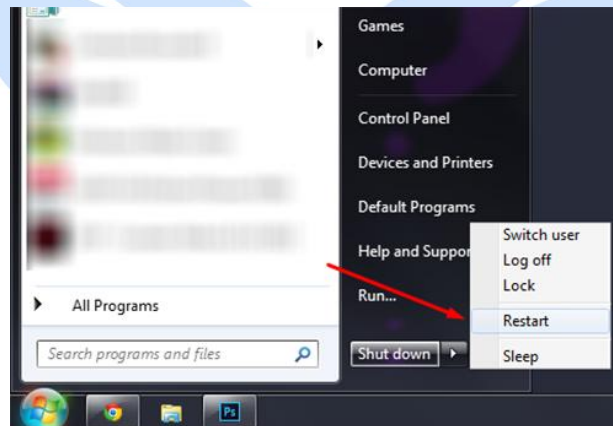
8. Then it will start installing all the selected drivers.



9. After the process is completed it will say that all the drivers are installed.



10. Now you need to restart your pc and you're done!



**RESULT:**

## INSTALLATION OF APPLICATION SOFTWARE-ANTIVIRUS INSTALLATION

### AIM:

To study the installation of the Application software(Antivirus installation).

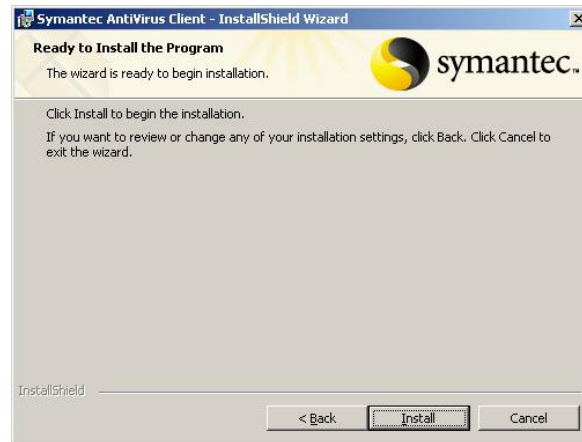
### COMPONENTS REQUIRED:

- 1 GB RAM
- Dual core Processor
- 160GB Hard disk
- CPU
- Monitor
- Keyboard
- Mouse
- Antivirus software

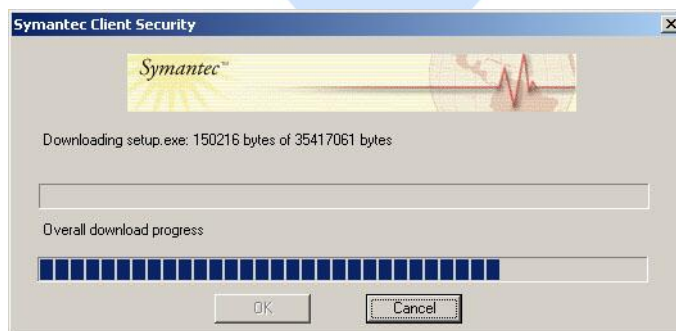


**PROCEDURE:****Step 1: Click the "Install Now" button**

This should be located in the lower left hand corner of the web site. Clicking this button begins the process.

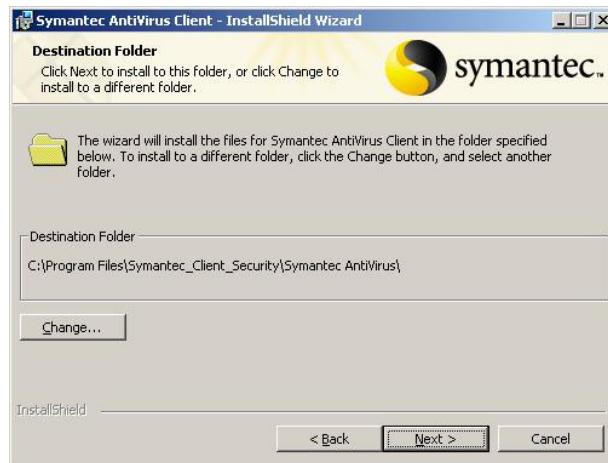
**Step 2: Download the required files**

After you click the "Install Now" button, the required files will automatically download to your computer. This may take a while.



### Step 3: The Installation

When the Welcome to the Install Shield Wizard window opens, click the "Next" button.

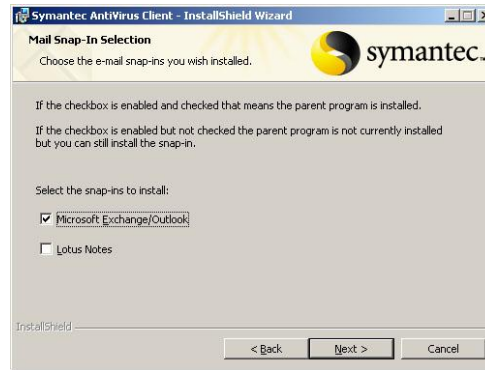


The next step in the installer is the license agreement. Choose the radio button that says that you agree with the license terms, and then click the "Next" button.



For the Mail Snap-In Selection, remove the check from the Microsoft Exchange/Outlook option, and then click the "Next" button.





The default location for the Destination Folder Selection is correct, so click the "Next" button.



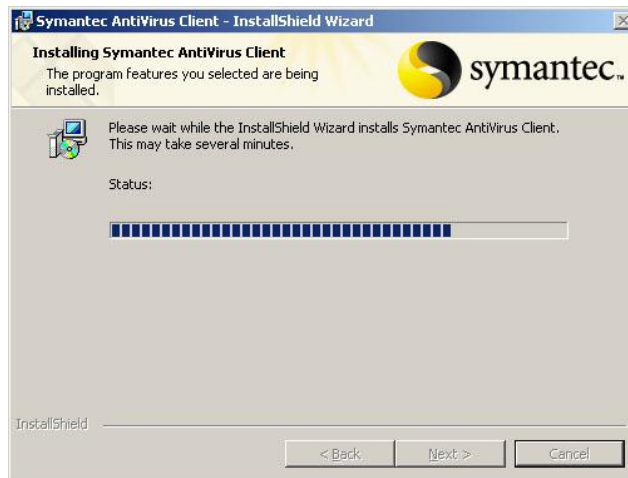
Click the "Install" button



Exp. No.:

Date :

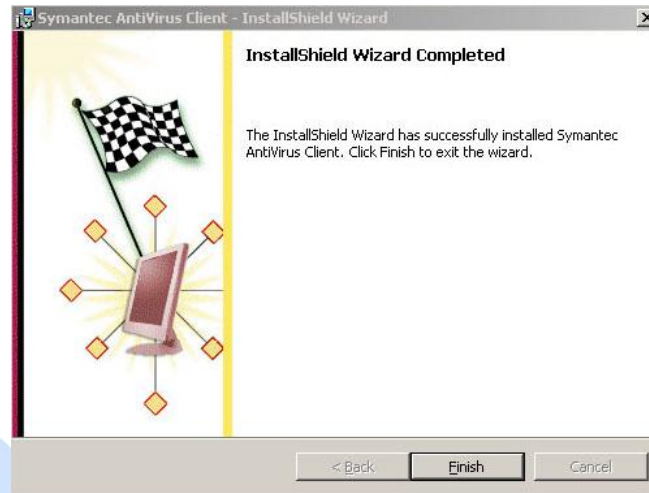
The installation may take a few minutes.



The next step in the installer is the Technical Support information. Click the "Next" button.

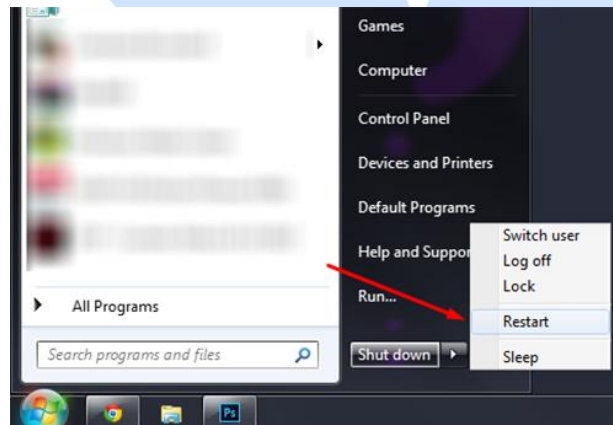


The installation is complete. Click the "Finish" button.



#### Step 4: Restart

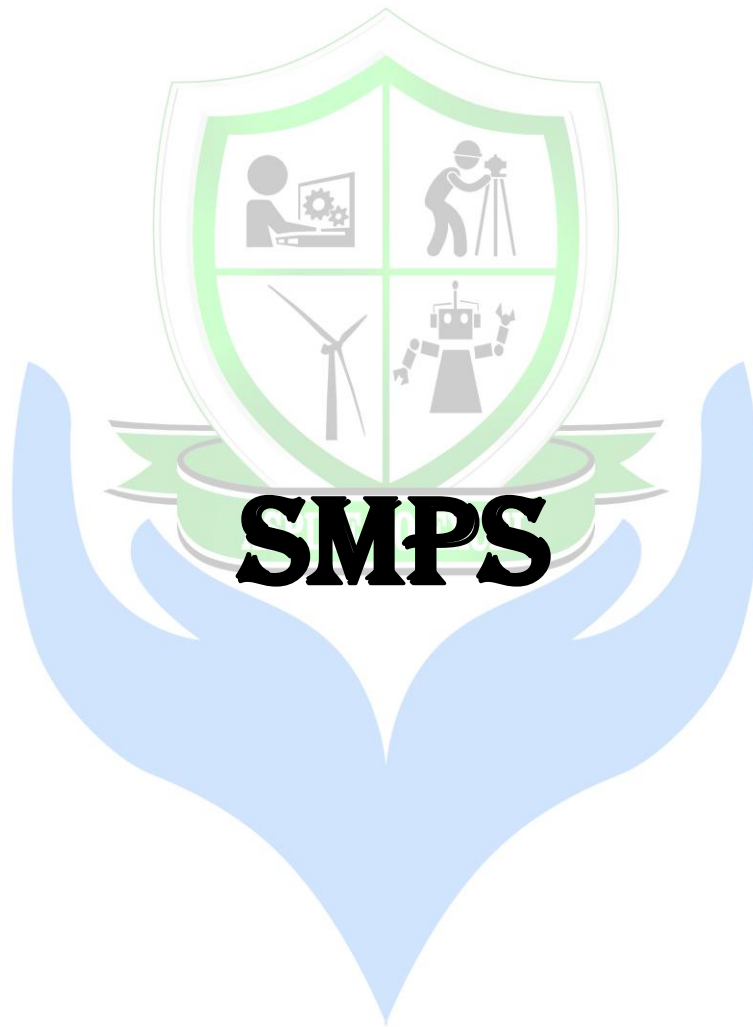
You *may* be asked to restart your machine when the process is complete. Do so if prompted. When your computer restarts, Norton Antivirus will begin a system scan of your machine.



**RESULT:**

Exp. No.:

Date :



## **TROUBLESHOOT SWITCHED MODE POWER SUPPLY AND FIND THE VARIOUS VOLTAGE.**

### **AIM:**

To Troubleshoot the Switched Mode Power Supply of a Personal Computer using a Multimeter.

### **COMPONENTS REQUIREMENT:**

- Multimeter.
- Connecting wires.
- ATX and Power connectors
- SMPS.
- Power supply.

### **PROCEDURE:**

- Take the ATX connector of the SMPS.
- Short circuit the GREEN and BLACK colored wires using a jumper. (i.e.) take a small piece of wire and connect one end in GREEN wire port and other in the BLACK.
- The power supply to the SMPS is switched ON.
- If the fan in the SMPS is working the SMPS is good.
- Check the voltages with a multimeter.
- The voltages are checked using a multimeter and noted down as follows. Turn on your multimeter and turn the dial to the VDC (Volts DC) setting.

Exp. No.:

Date :

- Connect the negative probe on the multimeter (BLACK) to any ground wired pin and connect the positive probe (RED) to the power line you want to test.
- Document the number that the multimeter shows for each test and confirm that the reported voltage is within approved tolerance.

A Good ATX SMPS wires gives the following voltage as the output.



WIRE	VOLTAGE	FUNCTION
Black	0	Ground
Blue	-12	Serial Data
Brown/Violet	+3.3	Sensor
Gray	+5	Power good supply
Green	+5	Power supply on/off
Orange	+3.3	D Ram Refreshing
Purple	+5	Stored by voltage
White	-5	Refreshing Ram
Yellow	+12	Motor Rotation
Red	+5	Logic circuit



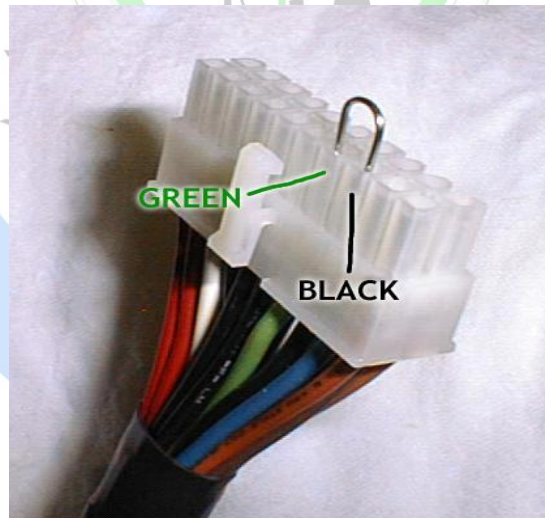
Exp. No.:

Date :

### AN SMPS



GREEN AND BLACK WIRES SHORT CIRCUITED



Exp. No.:

Date :



**TO ESTABLISH THE SERIAL COMMUNICATION****(RS232C between a pair of PC's)****AIM:**

To establish serial communication (RS232C) between a pair of PC's. The program shall be developed using C/C++/MASM with functions provided by BIOS and DOS interrupt services.

**COMPONENTS REQUIREMENT:**

- Pentium based workstation (PC) with NIC in each of them
- RS-232 cables to connect both the workstations.

**THEORY:****Serial Communication:**

It is a popular means of transmitting data between a computer and a peripheral device such as programmable instrument or even another computer. It uses a transmitter to send data are bit at a time, over a single communication line to a receiver.

It is popular because most computers have one or more serial ports, so no extra hardware is needed other than a cable to connect the instrument to the computer.

Serial communication requires the following four parameters.

- The bound rate of transmission.

- The number of data bits encoding a character.
- The sense of optional parity bit
- The number of stop bits.

**RS 232:**

RS-232 is most known serial port in transmitting the data in communication and interface. Even RS-232 in communication line which enable the data transmission by only using these wire links. Three line provides 'transmit', 'receive', common ground.

The 'transmit' and 'receive' line on this connector send and receive data between the computer. As name indicates the data is transmitted serially two pins are TXD and RXD.

The RS-232D has existing in 2-types. D-type 25 pin connector and D-type 9 pin connector which are made connectors on the back of PC. You need a female connector on your communication from your host.

**Null Modem:**

Null modem is used to connect to DTE together. This is used to transfer files between the computers using protocols like 2 modem protocol, modem protocol etc.

Null modem is used to connect two DTE and Data Terminal Ready (DTR) is looped back to data set ready and carrier detect on both computers when data terminal ready is active then data set ready and carrier detect immediately become active. At this point computer thinks the virtual modem is connected is ready and detected the carrier of other modem.

**Program the Serial port using C/C++ :**

There are two popular methods of sending data to or from serial port in turboc. One is using out ports (PORT-ID-DATA) or output (PORT-ID-DATA) defined in "dosh.h". Another method using bioscom() function defined by "bios.h".


**Using outportb()**

Outport() sends a data byte to port PORT-ID. The function con output() sends a data word. These function can be used for any port including serial port, parallel ports.

**Using BIOSCOM:**

The macro bioscom() and function BIOS-SerialCom() are used in this method in the serial communication using RS-232 connector twist port with the setting depending on our need we are sending data and port to be used to communicate.

Compile and run the below program in both computer. The character typed in one computer should appear on other and vice versa. Set port to desired settings in macro. If any key is pressed kbhit() function returns non zero value.

**PROGRAM:**

```
#include<bios.h>

#include<conio.h>

#define COM1 0

#define DATA_READY 0x100

#define SETTINGS ( 0x80 | 0x02 | 0x00 | 0x00)

int main(void)

{

    int in,out,status;

    bioscom(0, SETTINGS, COM1);

    cprintf("Data sent to you : ");

    while(1)

    {

        status = bioscom(3, 0, COM1);
```

```
if(status & DATA_READY)

    if((out = bioscom(2, 0, COM1) & 0x7F) != 0)

        putchar(out);

    if(kbhit())

    {

        if((in = getch()) == 27)

            break;

        bioscom(1, in, COM1);

    }

return 0;

}
```

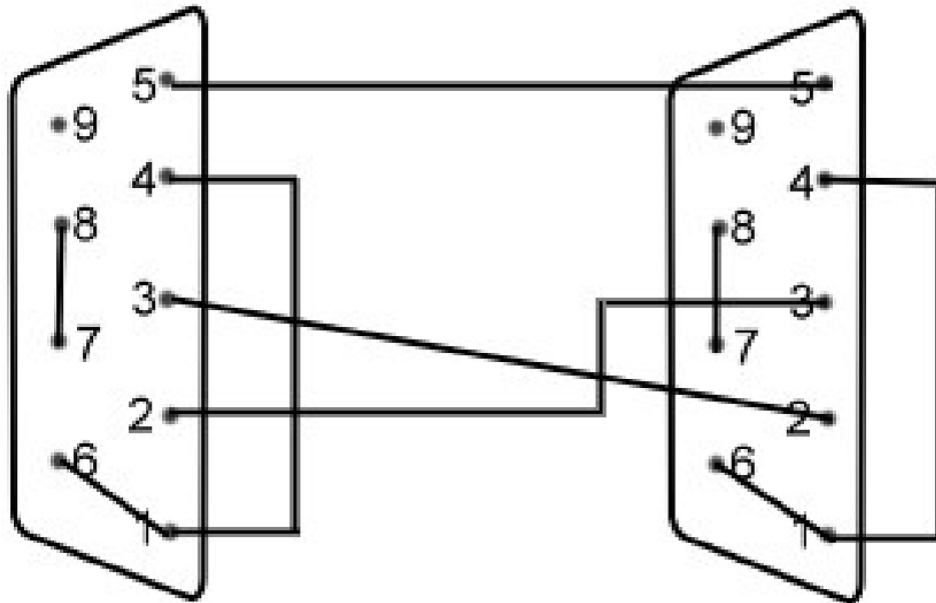
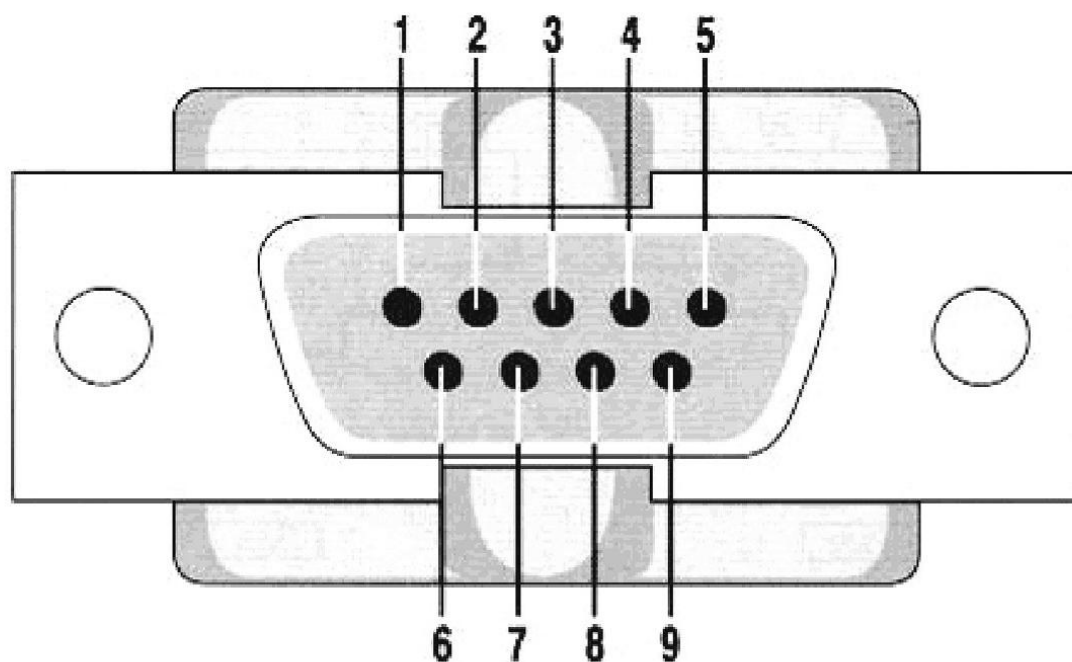


Figure 1. Null modem cable configuration





9-pin Dtype connector of an RS-232 serial port

Table 1: Pin configuration

Function	Signal	Pin	DTE	DCE
DATA	TXD	3	Output	Input
	RXD	2	Input	Output

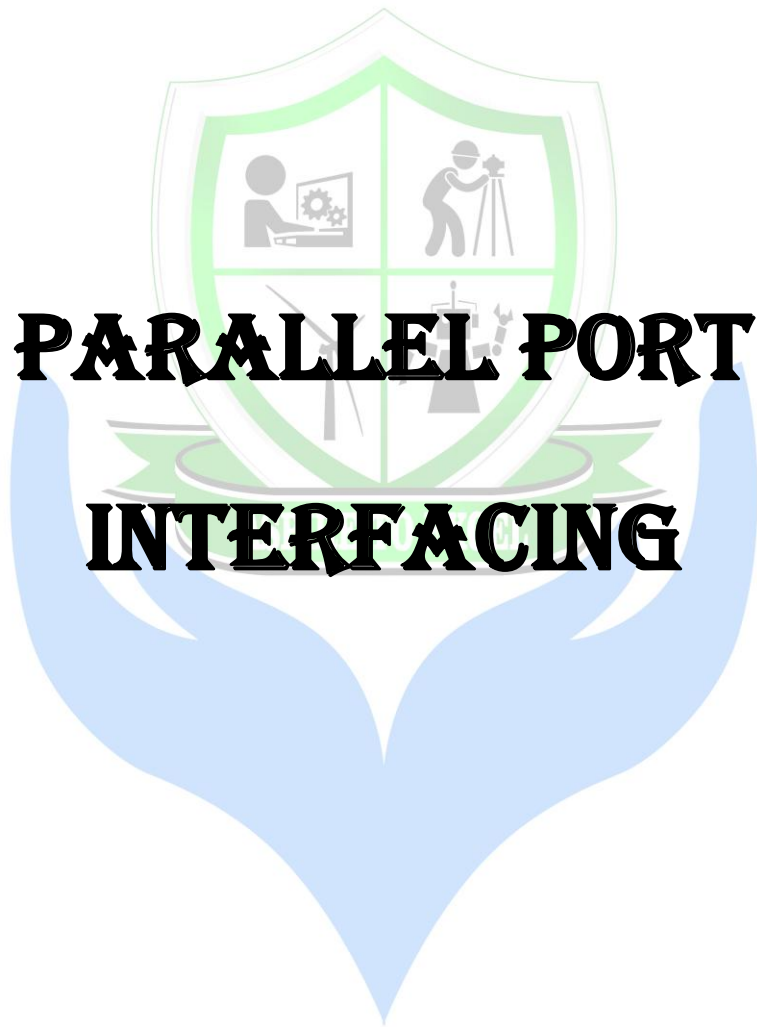
Exp. No.:

Date :

Hand shake	RTS	7	Output	Input
	CTS	8	Input	Output
	DCR	1	Input	Output
	DSR	6	Input	Output
	STR	4	Output	Output
Common	COM	5	-----	-----
Other	R1	9	Output	Output

Exp. No.:

Date :



## INTERFACING A 7 SEGMENT LED USING SSP

### AIM:

To interfacing a 7 segment LED using SSP environment.

### COMPONENTS REQUIRED:

- 7 segment LED
- Microcontroller 8051

### THEORY:

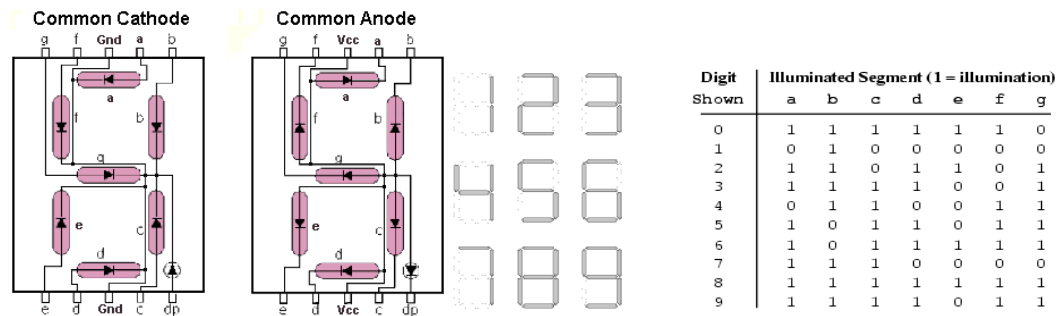
#### 7 SEGMENT LED:

In industrial PLC applications, one of the old, but simpler methods of displaying numeric information is to use one or more 7-Segment numeric displays connected to an output card of a PLC... Although it is possible to build such a display yourself, it is far more common to employ a pre-manufactured product such as the 4-digit panel mount unit

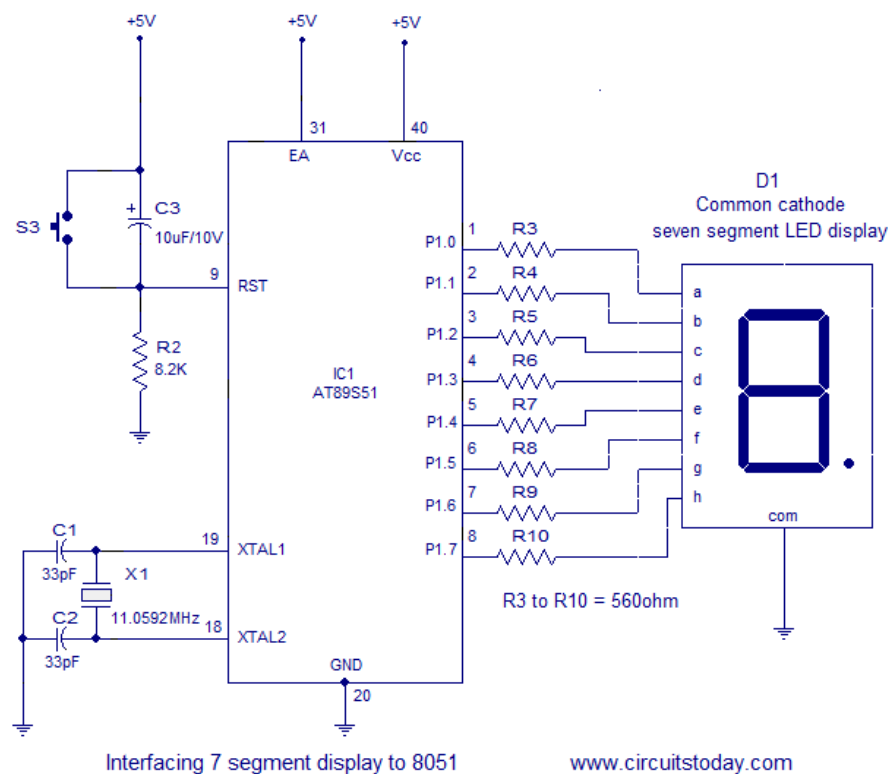


To correctly interface a PLC to such a display, it helps to first understand what basic electronic components are typically employed in their makeup, and how this effects our task of interfacing to, and programming such a unit... Although both LED and LCD numeric displays are readily

available, and interfaced similarly, we'll concentrate on the more common LED units in the examples to follow...



### Interfacing seven segment display to 8051:



The circuit diagram shown above is of an AT89S51 microcontroller based 0 to 9 counter which has a 7 segment LED display interfaced to it in order to display the count. This simple circuit illustrates two things. How to setup simple 0 to 9 up counter using 8051 and more importantly how to interface a seven segment LED display to 8051 in order to display a particular result.

The common cathode seven segment display D1 is connected to the Port 1 of the microcontroller (AT89S51) as shown in the circuit diagram. R3 to R10 are current limiting resistors. S3 is the reset switch and R2,C3 forms a denouncing circuitry. C1, C2 and X1 are related to the clock circuit. The software part of the project has to do the following tasks.

- Form a 0 to 9 counter with a predetermined delay (around 1/2 second here).
- Convert the current count into digit drive pattern.
- Put the current digit drive pattern into a port for displaying.

**PROGRAM:**

```
#include <stdio.h>
```

```
#include <LPC214x.H>
```

```
#define SEG1 1<<0
```

```
#define SEG2 1<<1
```

```
#define SEG3 1<<2
```

```
#define SEG4 1<<3
```

```
unsignedint n=1;
```

```
unsigned char a[10]={0xc0,0xf9,0xa4,0xb0,0x99,0x92,0x82,0xf8,0x80,0x90};
```

```
unsigned int thou, hun, ten, single;
```

```
unsignedint x;
```

[illegible]

Begins

Here

```
voidDelayMs(unsigned int count)
```



Exp. No.:

Date :

```
{
    unsigned int i, j;
    for(i=0; i<count; i++)
    {
        for(j=0; j<3000; j++);
    }
}

void Segment_Disp(int thou, int hun, int ten, int single)
{
    if(n==1)
    {
        IOPIN0 = SEG1;
        IOPIN0 &= (~(0xFF << 8));
        IOPIN0 |= a[single] << 8;
        n=2;
        DelayMs(5);
    }
    else if(n==2)
    {
        IOPIN0 = SEG2;
        IOPIN0 &= (~(0xFF << 8));
```

```
IOPIN0      |= a[ten] << 8;

n=3;

DelayMs(5);

}

else if(n==3)
{

IOPIN0      = SEG3;
IOPIN0      &= (~(0xFF << 8));
IOPIN0      |= a[hun] << 8;
n=4;
DelayMs(5);

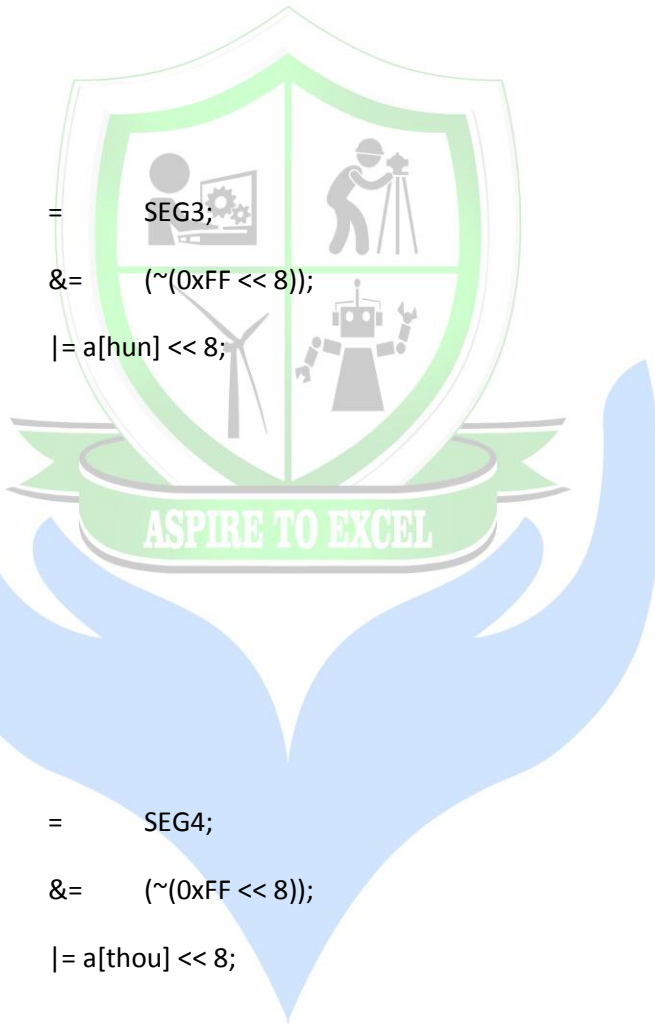
}

else if (n==4)
{

IOPIN0      = SEG4;
IOPIN0      &= (~(0xFF << 8));
IOPIN0      |= a[thou] << 8;
n=1;
DelayMs(5);

}

}
```



Exp. No.:

Date :

```
void main(void)
{

    PINSEL0 = 0;                                //Configure P0.0 - P0.15 as
GPIO

    /***** Choose the Direction of the Ports as per the Segment Port *****/

    IODIR0 |= 0xFFFF;                          // Configure both Data and
Control Lines as Output (P0.0 - P0.15 Here in this code)

    while(1)
    {
        thou = 0;
        hun = 1;
        ten = 2;
        single = 3;

        /***** Call the Seven Segment Display Function *****/

        Segment_Dis(thou, hun, ten, single);

    }
}
```

**RESULT:**

## INTERFACING A TIMER / PROGRAMMABLE IO USING PCI BUS

### AIM:

To interfacing a timer / programmable IO using PCI Bus.

### COMPONENTS REQUIRED:

- PCI Bus
- Microcontroller

### THEORY:

#### PCI BUS :

The PCI ([Peripheral Component Interconnect](#)) bus was defined to establish a high performance and low cost local bus that would remain through several generations of products. By combining a transparent upgrade path from 132 MB/s (32-bit at 33 MHz) to 528 MB/s (64-bit at 66 MHz) and both 5 volt and 3.3 volt signaling environments, the PCI bus meets the needs of both low end desktop systems as well as that of high-end LAN servers. The PCI bus component and add-in card interface is processor independent, enabling an efficient transition to future processors, as well as use with multiple processor architectures. The disadvantage of the PCI bus is the limited number of electrical loads it can drive. A single PCI bus can drive a maximum of 10 loads. (Remember when counting the number of loads on the bus, a connector counts as one load and the PCI device counts as another, and sometimes two.)

## Configuration Space

The PCI specification provides for totally software driven initialization and configuration of each device (or target) on the PCI Bus via a separate Configuration Address Space. All PCI devices, except host bus bridges, are required to provide 256 bytes of configuration registers for this purpose.

Configuration read/write cycles are used to access the Configuration Space of each target device. A target is selected during a configuration access when its IDSEL signal is asserted. The IDSEL acts as the classic "chip select" signal. During the address phase of the configuration cycle, the processor can address one of 64 32-bit registers within the configuration space by placing the required register number on address lines 2 through 7 (AD[7..2]) and the byte enable lines.

PCI devices are inherently little-endian, meaning all multiple byte fields have the least significant values at the lower addresses. This requires a big-endian processor, such as a Power PC, to perform the proper byte-swapping of data read from or written to the PCI device, including any accesses to the Configuration Address Space.

Systems must provide a mechanism that allows access to the PCI configuration space, as most CPUs do not have any such mechanism. This task is usually performed by the Host to PCI Bridge (Host Bridge). Two distinct mechanisms are defined to allow the software to generate the required configuration accesses. Configuration mechanism #1 is the preferred method, while mechanism #2 is provided for backward compatibility. Only configuration mechanism #1 will be described here, as it is the only access mechanism that will be used in the future.

## PROGRAM:

```
#include <LPC214x.h>
```

```
#define DELAY_MS 500 //0.5 Second(s) Delay
```

```
#define PRESCALE 60000 //60000 PCLK clock cycles to increment TC by 1
```

```
void Timer0_Init(void);
```

Exp. No.:

Date :

```
void T0ISR(void) __irq;

int main(void)
{
    VPBDIV = 0x01;                                //PCLK=60Mhz
    IO1DIR = 0x00FF0000;                          //P1.16 to P1.23 are output
    Timer0_Init();                                //Initialize Timer0
    while(1);
}

void Timer0_Init(void)
{
    /*Assuming that PLL0 has been setup with CCLK = 60Mhz and PCLK also = 60Mhz.*/

    TOCTCR = 0x0;                                // Timer Mode
    TOPR = PRESCALE-1;                            //(Value in Decimal!) - Increment TOTC at every
    60000 clock cycles

    //Count begins from zero hence subtracting 1
    //60000 clock cycles @60Mhz = 1 mS

    TOMR0 = DELAY_MS-1;                          //(Value in Decimal!) Zero Indexed Count -
    hence subtracting 1

    TOMCR = 3;                                    //Set bit0 & bit1 to High
    which is to : Interrupt & Reset TC on MR0

    //-----Setup Timer0 Interrupt-----
```



Exp. No.:

Date :

```
VICIntEnable = 0x10; //Enable timer0 int

VICVectAddr4 = (unsigned)TOISR; //Pointer Interrupt Function (ISR)

VICVectCntl4 = 0x20 | 4; //0x20 (i.e bit5 = 1) -> to enable Vectored IRQ slot
//0x4 (bit[4:0]) -> this the source number - here
its timer0 which has VIC channel mask # as 4

//You can get the VIC Channel number from
Lpc214x manual R2 - pg 58 / sec 5.5

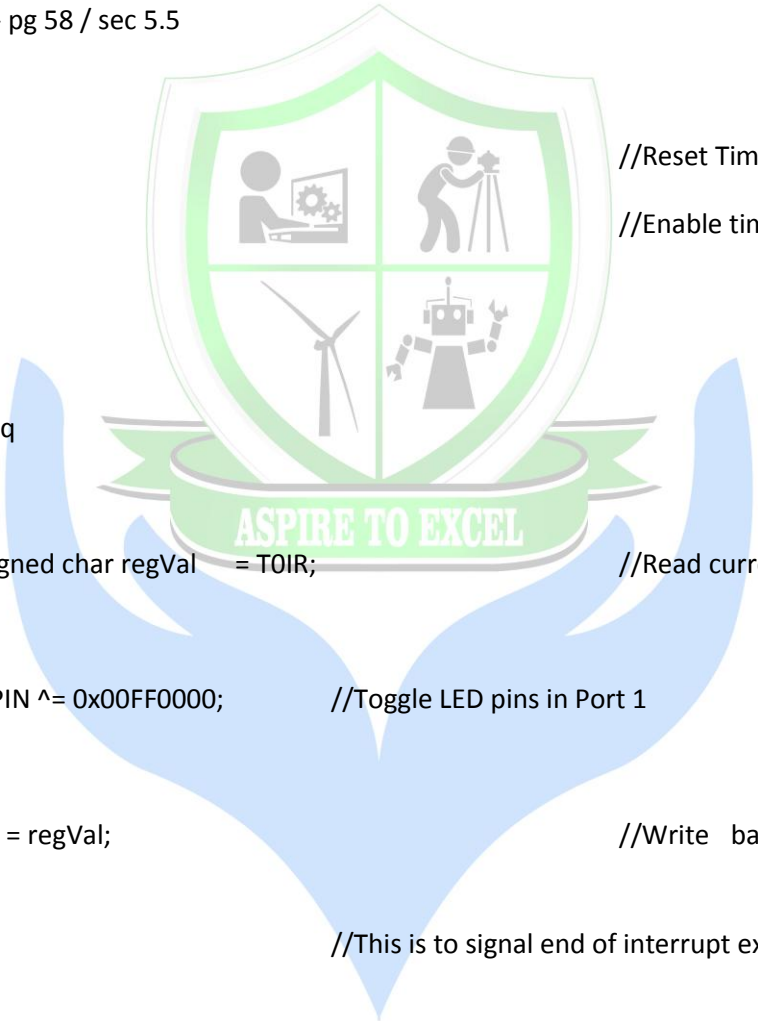
TOTCR = 0x02; //Reset Timer
TOTCR = 0x01; //Enable timer
}

void TOISR(void) __irq
{
    unsigned char regVal = TOIR; //Read current IR value;

    IO1PIN ^= 0x00FF0000; //Toggle LED pins in Port 1

    TOIR = regVal; //Write back to IR to clear
    Interrupt Flag

    VICVectAddr = 0x0; //This is to signal end of interrupt execution
}
```



## FORMATING AND PARTITIONING OF HARD DISK USING SATA

### AIM:

To format and partitioning of hard disk using Serial Advanced Technology Attachment.

### COMPONENTS REQUIRED:

- SATA
- Hard Disk
- OS
- Windows 2000/XP

### THEORY:

The simplest and most reliable way to determine whether a hard drive is a Serial ATA or Parallel ATA device is look at the back of the unit where the connections are. A parallel ATA, or IDE drive (still the most common variety) will look like the drive immediately below. Note the 40-pin parallel ATA connector, jumpers, and 4-pin Molex power socket. The drive is 3.5" wide, and a little less than 1" thick.



Serial ATA hard drives are physically the same shape and size, and differ only in the type of electrical connectors they require to interface with the motherboard. A Serial ATA drive is pictured directly above. Note the small, flat, keyed power and Serial ATA connectors. Some serial ATA drives also have a 4-pin Molex power socket as IDE drive pictured above, so yours may look slightly different from the Seagate SATA drive pictured here.



Recently purchased computer motherboards should have both serial ATA and IDE connectors on board, but older boards will have only IDE connectors. Once you've verified which type of hard disk you are using, the next step is to power off your computer and open it up to ensure that you have the necessary connectors free for the new hard drive.

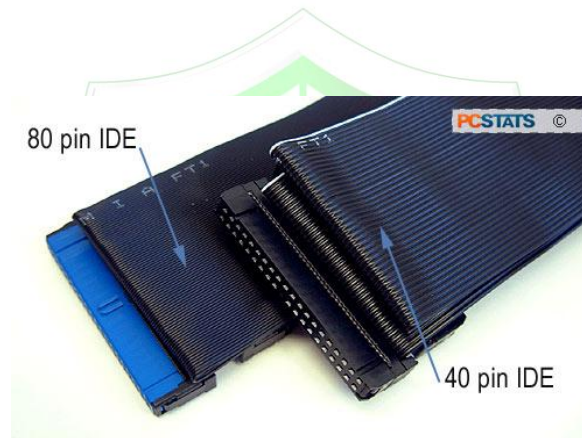
Each SATA port can support a single SATA drive, while each IDE connector can support two IDE hard drives or optical drives (technically, this means a total of two IDE devices per channel). IDE data cables have three connectors; one connects to the motherboard and the other two attaching to the drives.

Now that you've figured out which type of hard disk you are installing, we're going to start with the procedure for installing an IDE hard disk first, then move onto installing a SATA drive.

### **Physically Installing an IDE Hard Drive:**

Modern IDE hard drives use an 80-pin UDMA cable, while older hard disks and most optical drives use the 40-pin cable. If you are installing a hard disk that was made within the last eight years, you'll want to use the 80-pin cable. Note that the 80-pin and 40-pin names denote the

number of wires in each type of cable, though both types still physically connect to the motherboard through a 40-pin connector.



Each IDE cable (both 40-pin and 80-pin types) can support two IDE devices, either hard disks or optical drives or a combination of the two. Depending on how your computer is currently configured, you may have an available space on an IDE cable that you can attach your new drive to, or you may need to add a second cable.

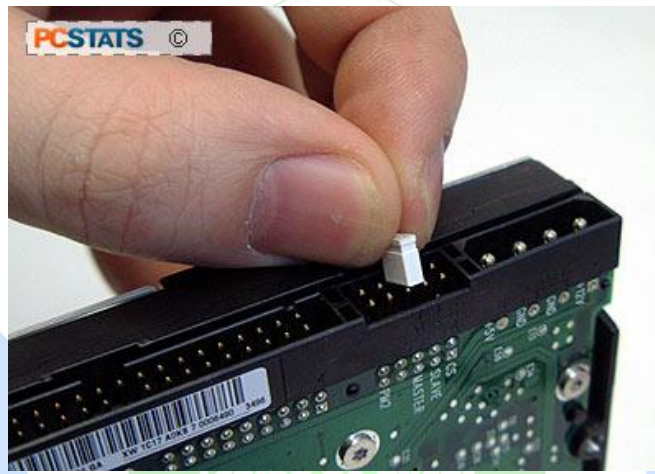
IDE cables connect to the motherboard through the IDE (Integrated Disk Electronics) controller interface, which provides the means to transfer data to and from the drives. An average PC will have a pair of IDE controllers, of various colours, each represented by one 40-pin connector (see picture).



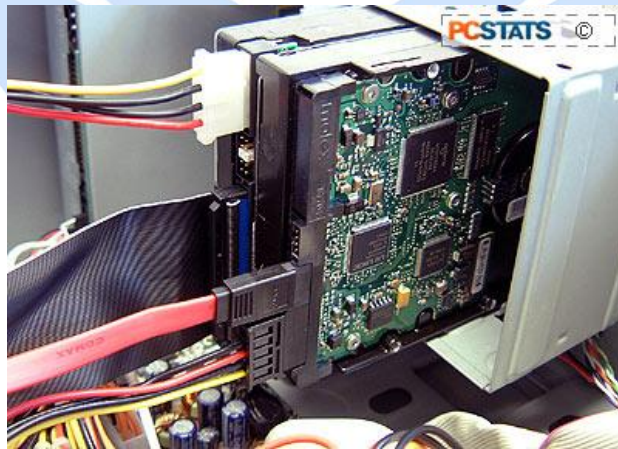
Power down your computer, look inside and locate your existing hard drive and the IDE connectors on your motherboard to determine where you can add your new hard disk. Remember that each cable supports two drives, and each connector on the motherboard holds one cable.

### **PROCEDURE:**

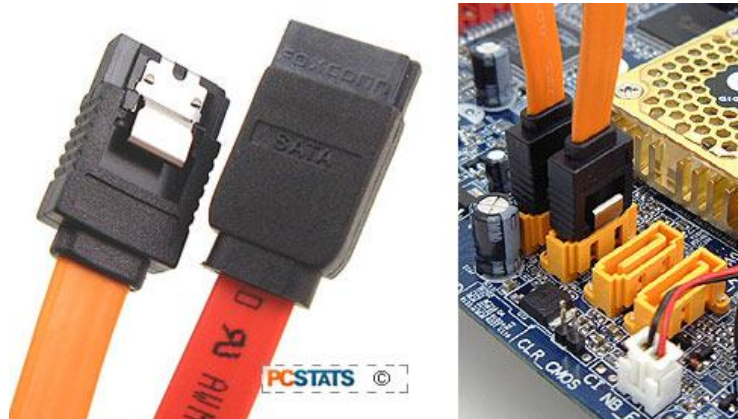
#### **STEP 1:**Preparing an IDE Hard Drive For Installation



#### **STEP 2:** Physical Installation of a IDE Hard Drive





**STEP 3:**Physically Installing a Serial ATA Hard Drive**STEP 4:** Confirming the Installation of a Hard Drive**STEP 5:** Partitioning and Formatting a Second drive in Windows 2000/XP

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free	Fault Toler
(C:)	Partition	Basic	NTFS	Healthy (System)	19.13 GB	1.63 GB	8 %	No
(D:)	Partition	Basic	FAT32	Healthy (Active)	24.41 GB	5.97 GB	24 %	No
DATA BACKUP (E:)	Partition	Basic	FAT32	Healthy	9.76 GB	99 MB	0 %	No

<b>Disk 0</b> Basic 19.13 GB Online	<b>(C:)</b> 19.13 GB NTFS Healthy (System)
<b>Disk 1</b> Basic 38.17 GB Online	<b>(D:)</b> 24.42 GB FAT32 Healthy (Active)
	<b>DATA BACKUP (E:)</b> 9.77 GB FAT32 Healthy
<b>CD-ROM 0</b> CD-ROM (F:) No Media	

■ Primary partition 
■ Extended partition 
■ Free space 
■ Logical drive



Exp. No.:

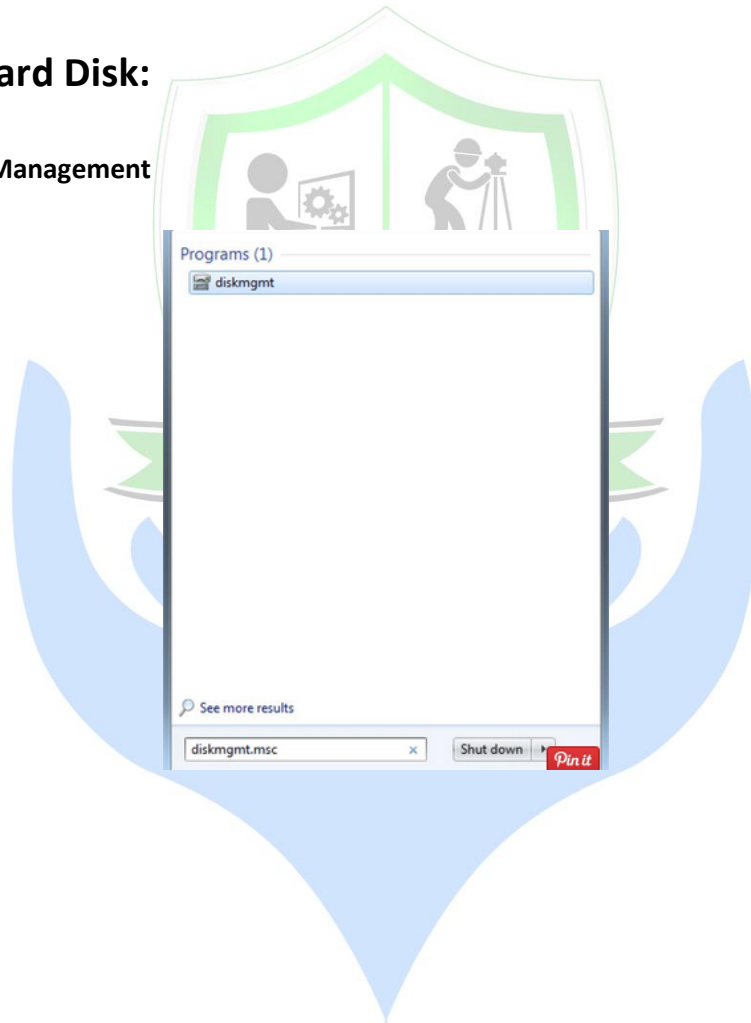
Date :

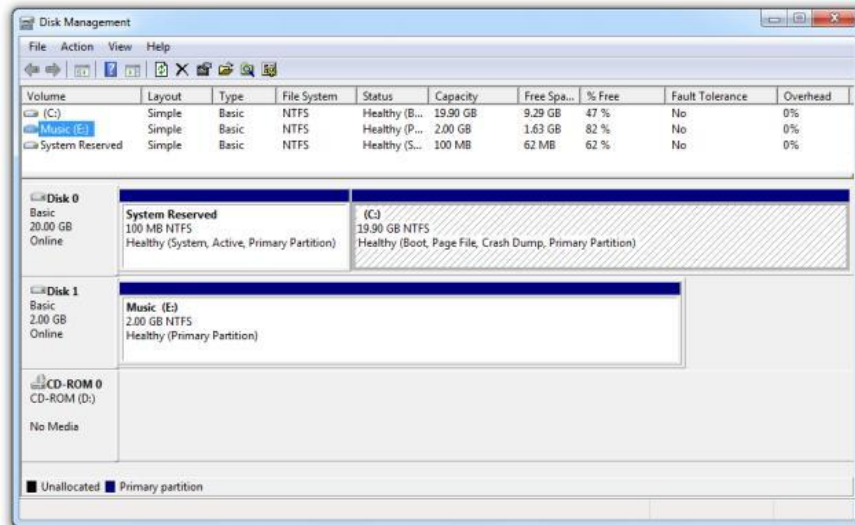
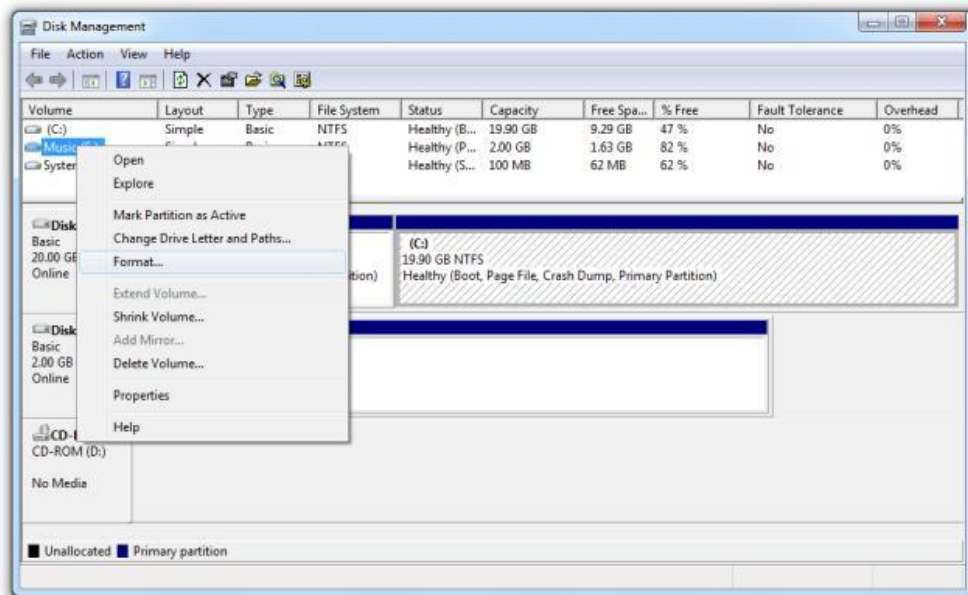
**STEP 6 :**Right click the unused space and select 'new partition' to use this space. The wizard will walk you through creating, sizing and formatting the partition with NTFS or FAT32.

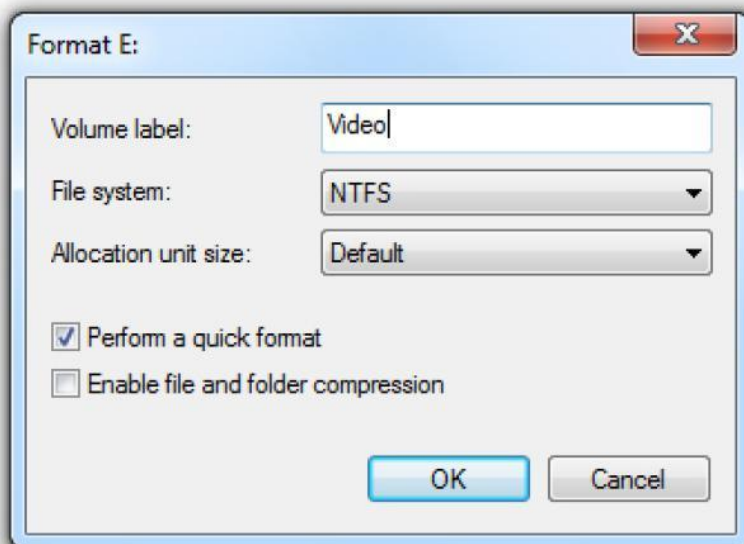
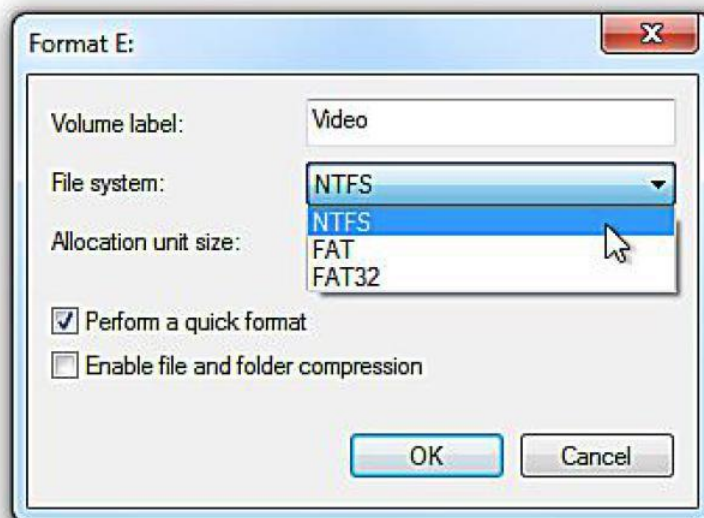


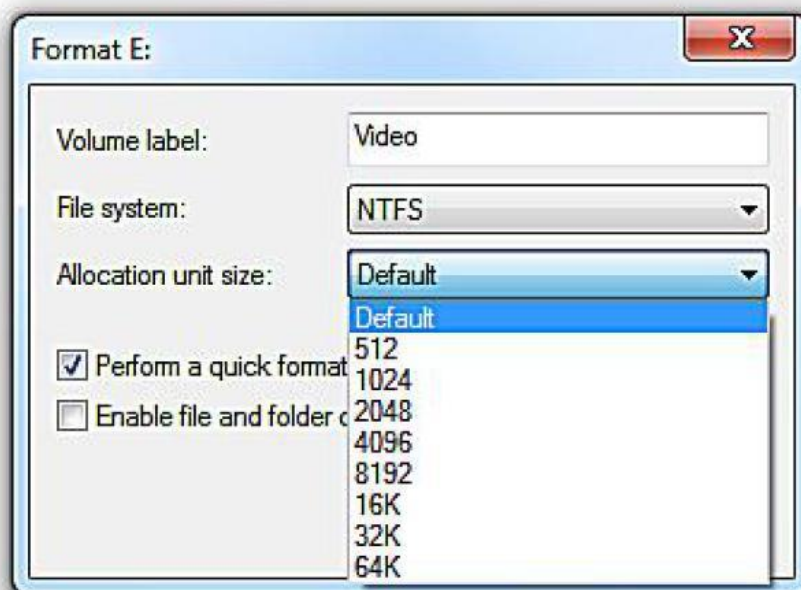
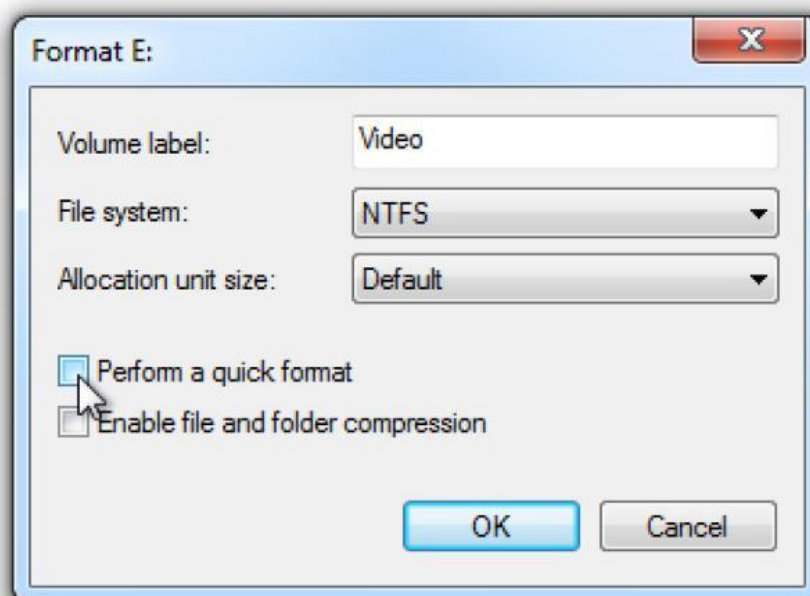
## Formatting Hard Disk:

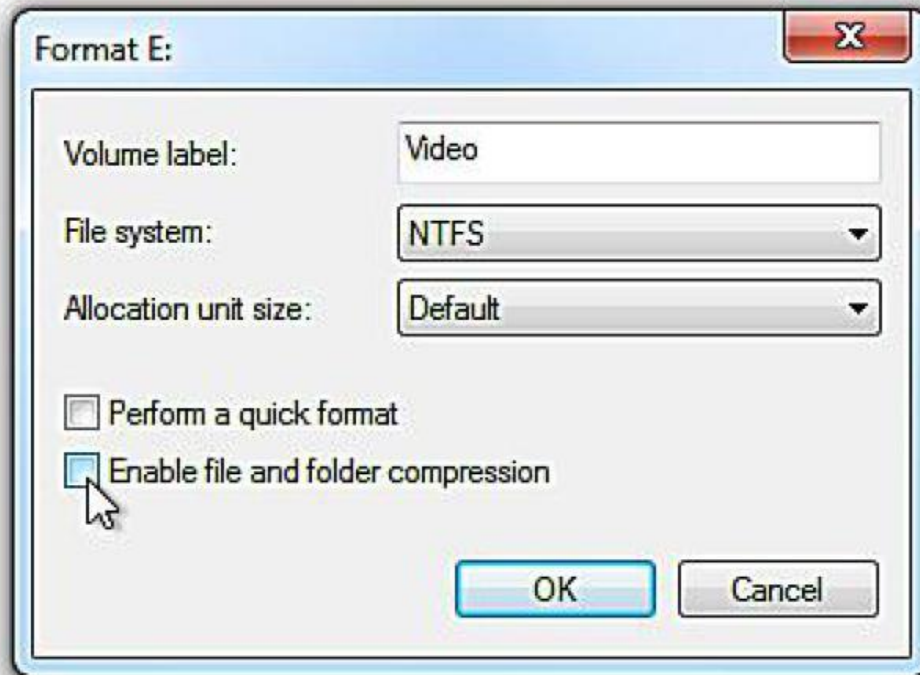
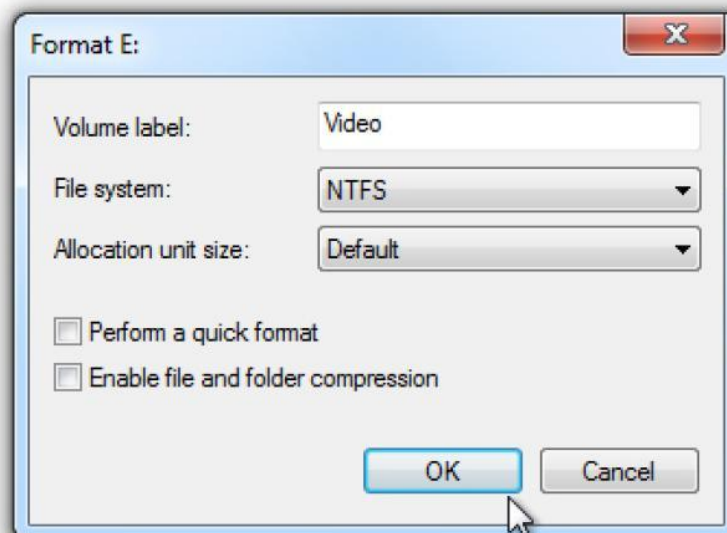
**STEP 1: Open Disk Management**



**STEP 2: Locate the Drive You Want to Format****STEP 3: Choose to Format the Drive**

**STEP 4: Give a Name to the Drive****STEP 5: Choose NTFS for the File System**

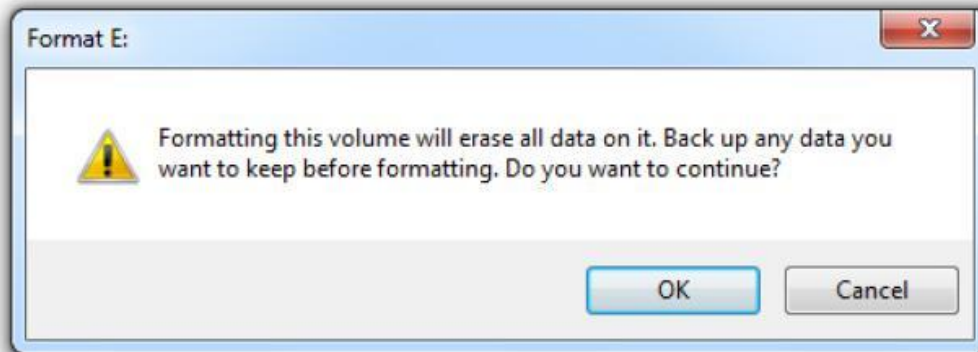
**STEP 6: Choose Default for the Allocation Unit Size****STEP 7: Choose to Perform a Standard Format**

**STEP 8: Choose to Disable File and Folder Compression****STEP 9: Review Format Settings and Click OK**

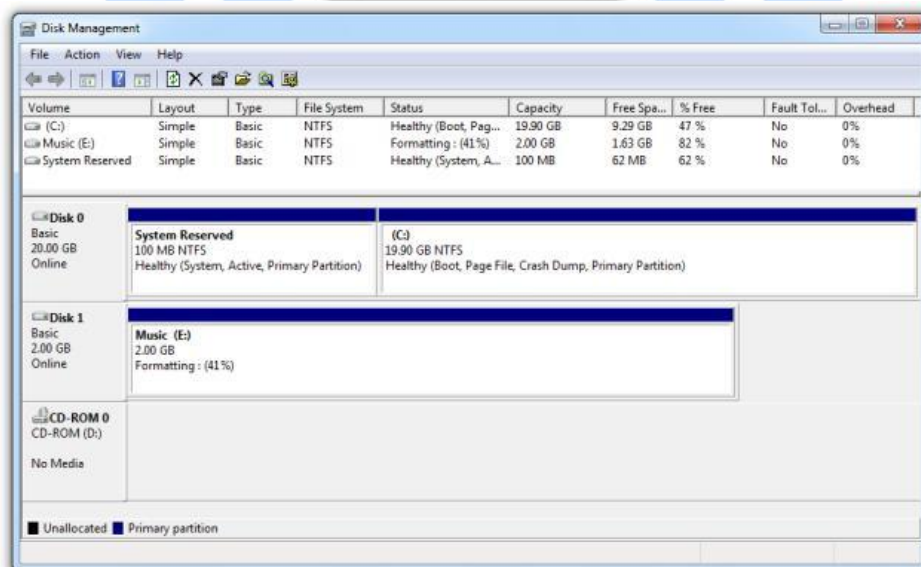
Exp. No.:

Date :

**STEP 10: Click OK to Loss of Data Warning**



**STEP 11: Wait for the Format to Complete**

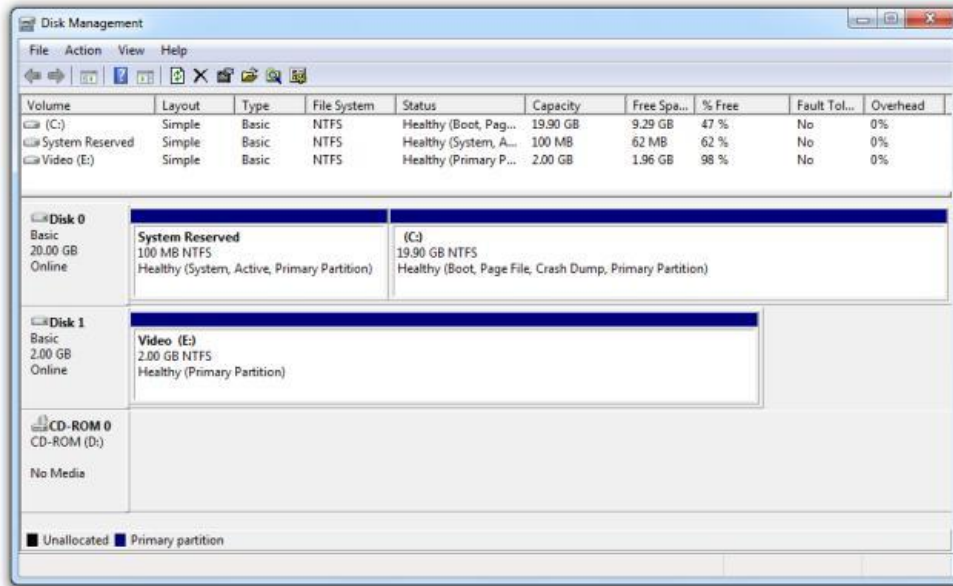




Exp. No.:

Date :

### STEP 12 :Confirm That the Format Completes Successfully



RESULT:

**NETWORKING PC'S SETTING UP WIRED LAN'S AND TROUBLESHOOTING****AIM:**

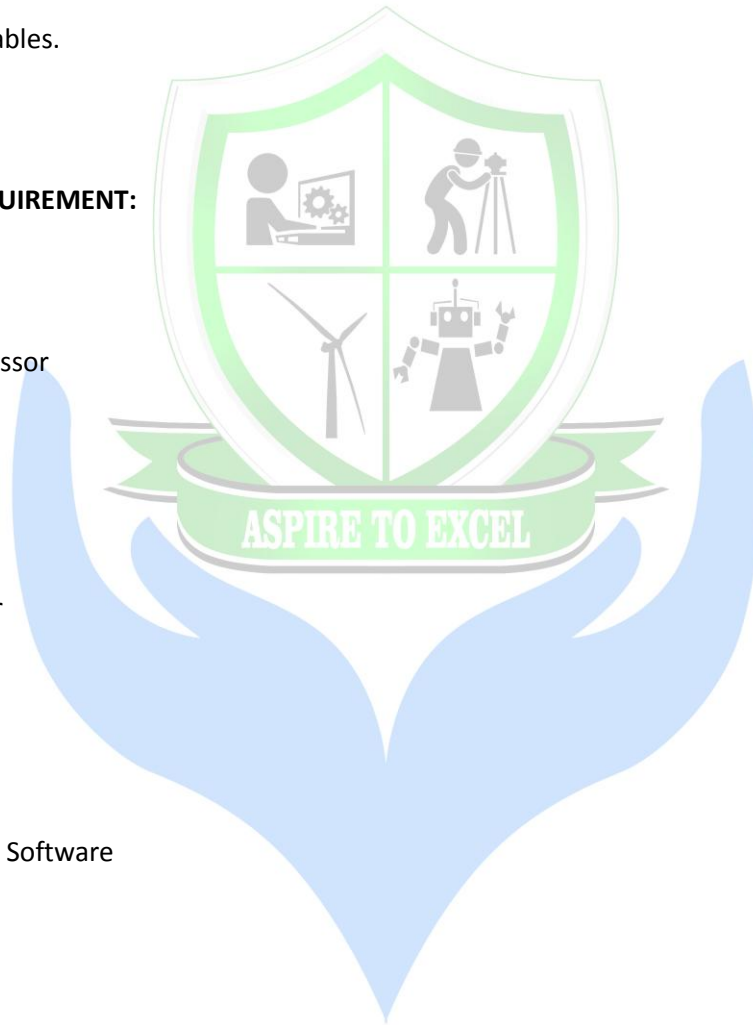
To perform pc to pc communication by using NIC with IP configuration and interconnection using switches and UTP cables.

**COMPONENTS REQUIREMENT:****HARDWARE:**

- Pentium4 processor
- NIC
- Ethernet Cable
- RJ 45 Connector

**SOFTWARE:**

- Windows xp
- Network Device Software



**Ethernet/Network Interface Card (NIC)**

It is available in 10 mbps or 100 mbps or 10/100 mbps, 100 mbps is faster than 10 mbps. Two types of connection and LED's are provided in the card –BNC connector to connect BNC cable – RJ45 connector to connect UTP cable now 10/100 mbps and have only RJ45 connector. LED is to indicate working of Hub.

**STEPS TO BE FOLLOWED WHILE INSTALLING A NIC ARE**

1. Power down your PC and unplug it. Remove the screws holding the sides of the case on and slowly slide off both the panels.
2. Locate an empty PCI slot and remove the metal backing plate by taking out the screws holding it by slowly sliding it up and out. Do this with the help of flat-blade screw driver or pliers, taking care of sharp edges left behind.
3. Remove the network interface card from its anti-static bag and place it over the slot with the jack facing outside the PC.
4. Firmly press down the NIC such that the mounting bracket is properly aligned with the slot. Gently rock the card from end to end to secure it in the slot so that the gold contacts at the bottom of the NIC disappears totally in the slot. The card should be even and straight.
5. Replace the NIC mounting bracket to the case with a screw and plug your machine back in. Plug in the Ethernet wire to the RJ-45 jack and the other end into the DSL modem, hub, router or directly to another PC. This finishes the hardware installation.
6. The NIC comes with a disk containing the necessary drivers required for the software installation. Just follow the manufacturer's instruction while installing. Follow the network wizard located in the Start - Settings - Control Panel.

## UTP (Unshielded Twisted Pair Cable)

- 10base Straight Cable (PC to HUB/SWITCH)
- 10baseT Crossed cable (PC to PC or HUB to HUB)
- 100baseT Straight Cable (PC to HUB/SWITCH)
- 100baseT Crossed cable (PC to PC or HUB to HUB)
- RJ45 Connector

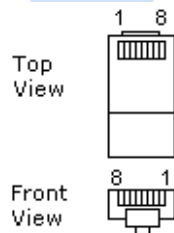
In this type of cable there are 8 wire and 4 pair of wires, there are 4 different colors (Green, Orange, Blue, Brown) and White color paired with all the above colors. It connected color making it easy for identification. There are two types of connection with RJ45 connector.

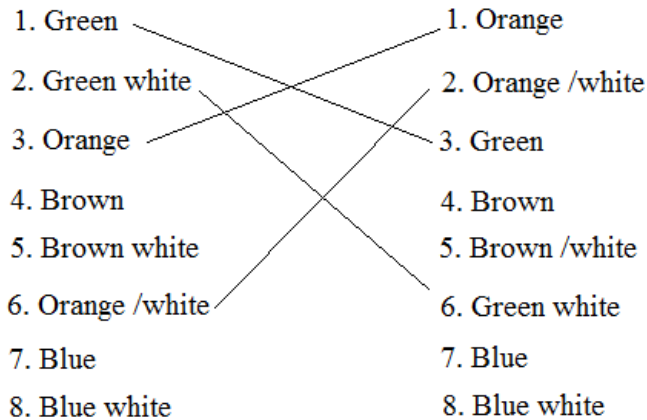
- RJ45 Crossover Cable
- RJ45 Straight Cable

Crossed Cable is used to connect PC to PC or Hub to Hub and Straight Cable is used to connect Hub/Switch to PC

### UTP Cable connection with RJ45

RJ45 Male Connector



**Color code****STEPS**

1. Turn off both computers and connect one end of the Ethernet cable to the network card slot of computer1. Then connect the other end of the Ethernet cable to the network card slot of computer2.
2. After both the ends of the Ethernet cable is connected, turn on both the computers one by one. Now have to assign a unique Workgroup to each computer. Then Start menu, right click on "My Computer" and select "Properties". Click the "Change" button and assign this computer to a unique Workgroup.
3. Restart both the computers one by one. Now you are ready to share files and folders between the two computers, which are connected in a network.
4. On computer 1 which runs Windows XP, click "Start menu" and go to "My Network Places". You will see a new icon of your second computer in the "My Network Places" folder. Any document which you share in computer 2 , can be found on this folder in computer1.

**Network switch**

A network switch is a small hardware device that joins multiple computers together within one local area network (LAN). Different models of network switches support differing numbers of connected devices. Most consumer-grade network switches provide either four or eight connections for Ethernet devices. Switches can be connected to each other, a so-called daisy chaining method to add progressively larger number of devices to a LAN.

Network Switches are the basic components of an IP Network. All the network endpoints (like PC's, Laptops, Printers, etc) connect to these switches. As the name goes, they switch (distribute) the data received from one node to any other node in the network. The network switches come in a variety of configurations, and the popular ones are mentioned below:

8 Port – 10/100 Mbps

16 Port – 10/100 Mbps

24 Port – 10/100 Mbps

48 Port – 10/100 Mbps



16 port switch

#### **CONFIGURING IP :**

##### **Peer-to-peer/work group**

Peer-to-peer or work group both are same peer means equal. Here all users are equal. There is no administration work group of purple using peer to peer method. The following step these are to be done properly.

1. Network property configuration.
2. Sharing of hardware [ HDD, FDD].
3. Sharing of folder and files.



**Network property configuration**

The Adapter card software (device drive) is installed in two ways.

**Method: 1**

At the time of booting the computer will be found.” A new Hardware Found “then we have to select drive provided by manufactures.

**Method: 2**

At the time of asking device drive we can skip after entering to windows.

**Step: 1** Install adapters.

Add -> adapter -> Hard drive -> ok.

**Step: 2** Install adapter TCP/IP protocol.

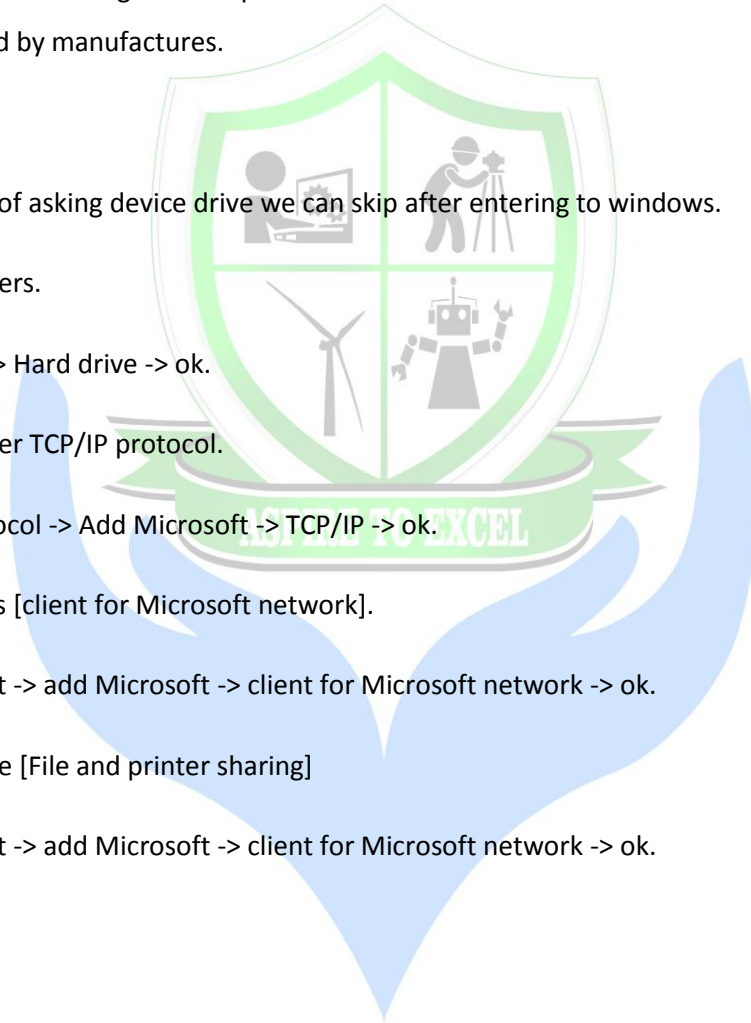
Add -> protocol -> Add Microsoft -> TCP/IP -> ok.

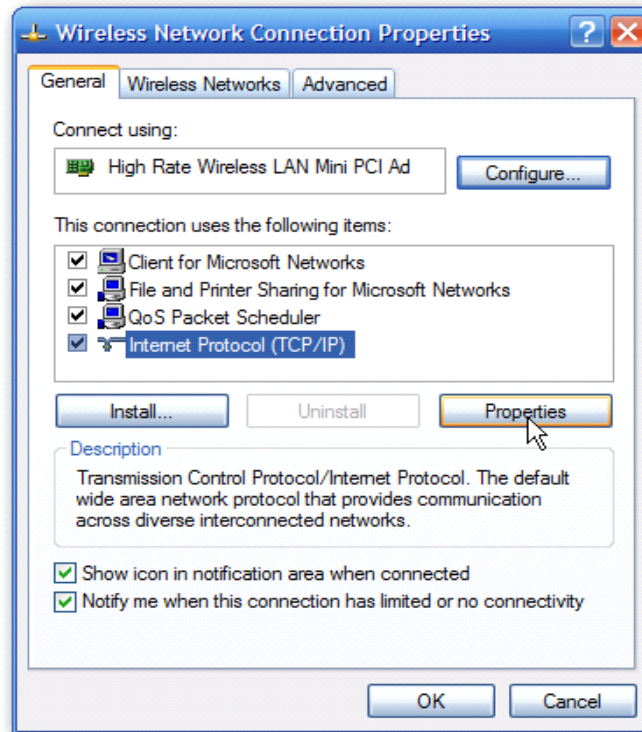
**Step: 3** Install clients [client for Microsoft network].

Add -> client -> add Microsoft -> client for Microsoft network -> ok.

**Step: 4** Install service [File and printer sharing]

Add -> client -> add Microsoft -> client for Microsoft network -> ok.





Share any folder or file and new it in “My network places” on other system. To install the network setting does the following steps:

**Step: 1** To set a Static IP in XP right-click on My Network Places and select Properties.

**Step: 2** Right-click on the adapter you want to set the IP for and select Properties.

**Step: 3** Highlight Internet Protocol (TCP/IP) and click the Properties button.

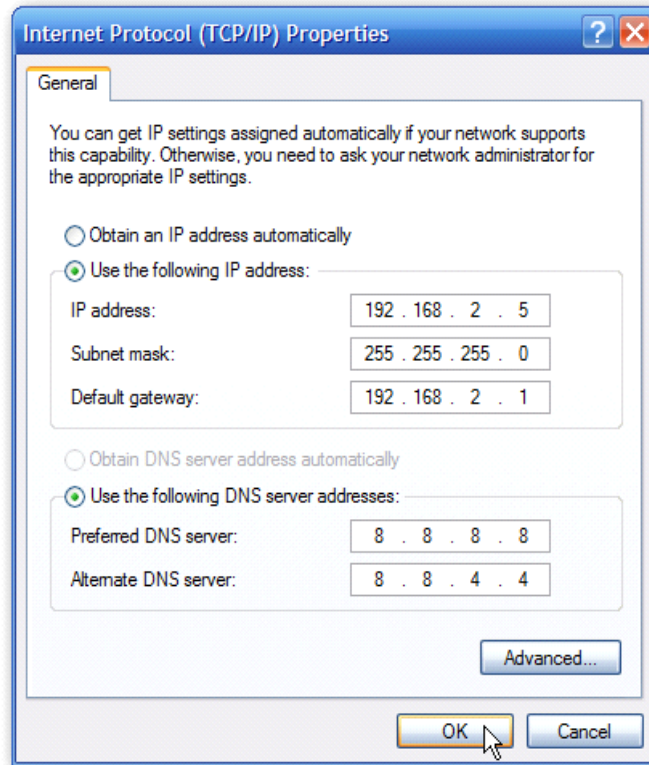
**Step: 4** now change the IP, Subnet mask, Default Gateway, and DNS Server Addresses. When you're finished click OK.

**Step: 5** you will need to close out of the Network Connection Properties screen before the changes go into effect.

**Step: 6** Again you can verify the settings by doing an ipconfig in the command prompt. In case you're not sure how to do this, click on Start then Run.

**Step: 7** In the Run box type in cmd and click OK.

**Step: 8** then at the prompt type in ipconfig and hit Enter. This will show the IP address for the network adapter you changed. If you have a small office or home network, assigning each computer a specific IP address makes it a lot easier to manage and troubleshoot network connection problems.



Set IP address for all network pc, the last value should be unique and connected system in LAN. The IP values between 0 to 255. Follow these same steps for other system are also connected in LAN.

## INTERCONNECTION USING SWITCHES AND CABLES

### Connecting devices

Router  
Hub  
Bridge  
Modem  
Switches

### Router :

A device that forwards data packets along networks.

A router is connected to at least two networks commonly two LAN or WANs or a LAN and its ISPs network.

Routers are located at gateways the place where two or more networks connect.

**Hub:**

A common connection point for devices in a networks.

Hubs are commonly used to connect segments of a LAN.

A hub contains multiple ports. When a packet arrives at one port it is copied to the other ports so that all segments of the LAN can see all packets.

**Bridge:**

A bridge can join segments or workgroup LANs.

However a bridge can also divides a networks to isolate traffic or problems.

**Modem:**

A modem is a device or program that enables a computer to transmit data over, for example telephone or cable lines.

Computer information is stored digitally whereas information transmitted over telephone line is transmitted in the form of analog waves.

A modem converts between these two forms.

**Switches:**

A network switch is a small hardware device that joins multiple computers together within one LAN.

**Cables:**

Co-Axial cable

Twisted-Pair cable

Fiber-Optic cable

**Co-Axial cable:**

Co-Axial cable was the most widely used networking cabling.

These were a couple of reasons for co-axial cables wide usage;

It was relatively expensive.

It was light.

Flexible.

Easy to work.

**Types of Co-Axial cable**

Thin (Thinnet) cable

Thick (Thicknet) cable

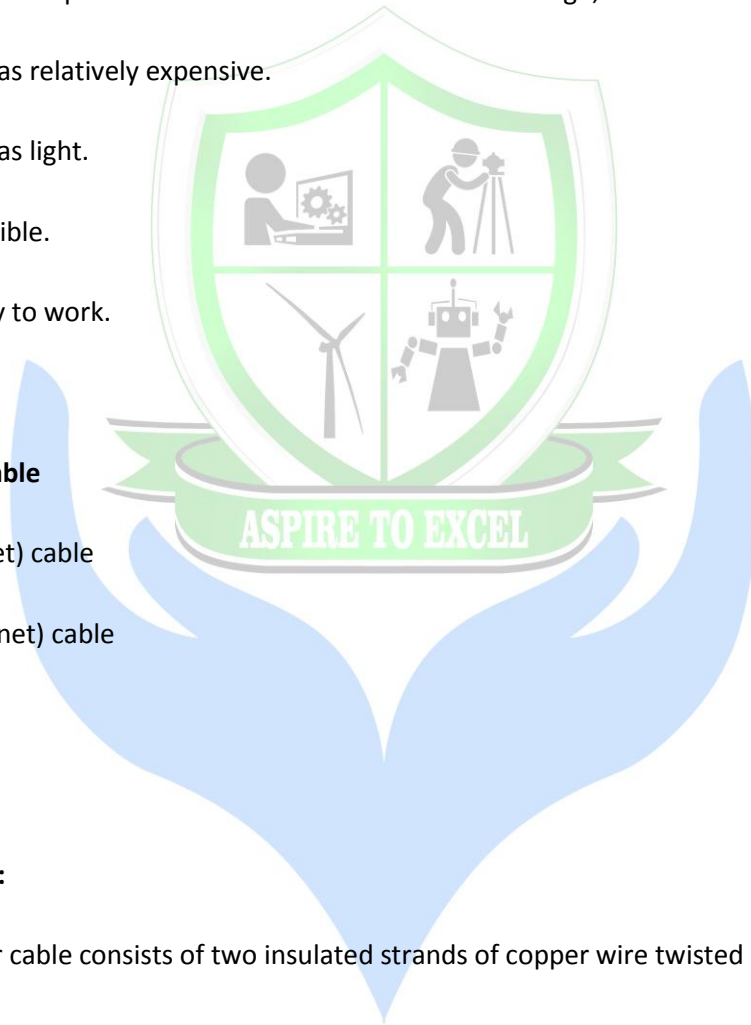
**Twisted - pair cable:**

Twisted pair cable consists of two insulated strands of copper wire twisted around each other.

**Types:**

Unshielded twisted pair (UTP)

Shielded twisted pair(STP)



**Fiber-Optic cable:**

In fiber optic cable optical fibers carry digital data signals in the form of modulated pulses of light.

**Category 5 cable:**

Category 5 cable is a twisted pair cable for carrying signals.

This type of cable is used in strutted cabling of cable for computer network such as Ethernet.

It is also used to carry other signals such as telephony and video .

Most category 5 cables are unshielded, relying on the twisted pair design and differential signaling for noise rejection.

**Category 6 cable:**

Category 6 cable commonly referred to as cat 6 is a cable standard for gigabit Ethernet and other network physical layers that is backward compactable with the category 5/5e and category 3 cable standards.

**Cat 5 vs cat5e vs cat 6**

Cat 5	Was the first ?UTP standard to attempt to do 100 Mbps, there were some issues with full duplex crosstalk are resolved in cat 5e.
Cat 5e	Also supports 1 Gbps Ethernet, but not faster.
Cat 6	Was the first UTP standard to attempt to do 10 Gbps, but is only rated to 37m at 10 Gbps.
Cat 6A	Address this and supports to 10 Gbps Ethernet to 100m

**Network cables:**



There are two major network cables.

Straight through cable

Cross over cable

### Straight through cable (T568A):

Computer to hub, switches, router or wall.

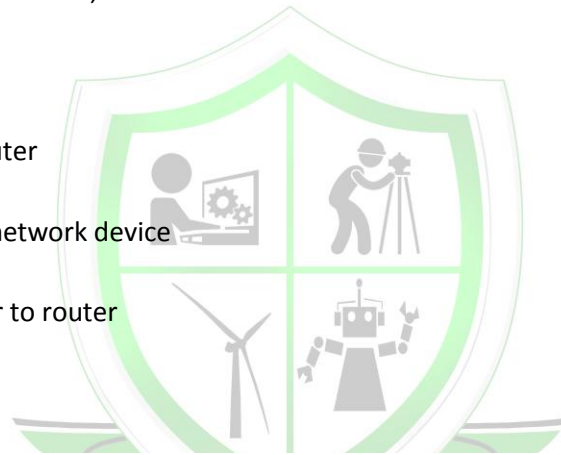
### Cross over cable:

Computer to computer

Network device to network device

For examples router to router

### Color codes:



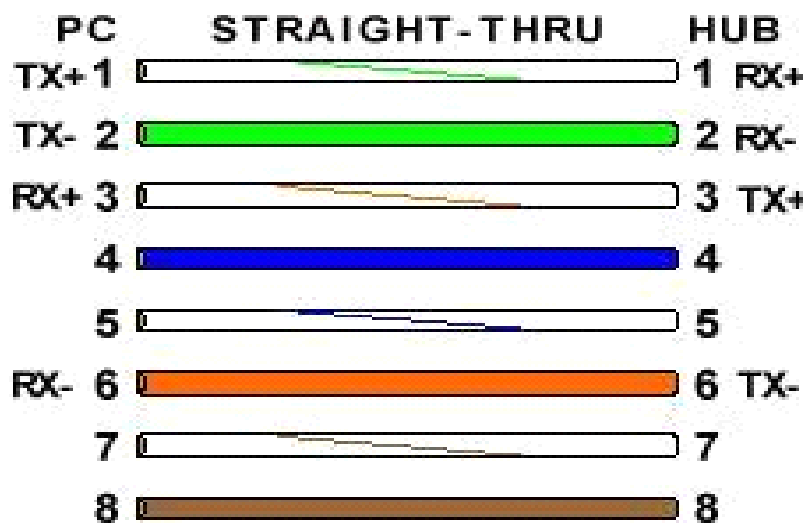
### TIA/EIA 568A Wiring

1		White and Green
2		Green
3		White and Orange
4		Blue
5		White and Blue
6		Orange
7		White and Brown
8		Brown

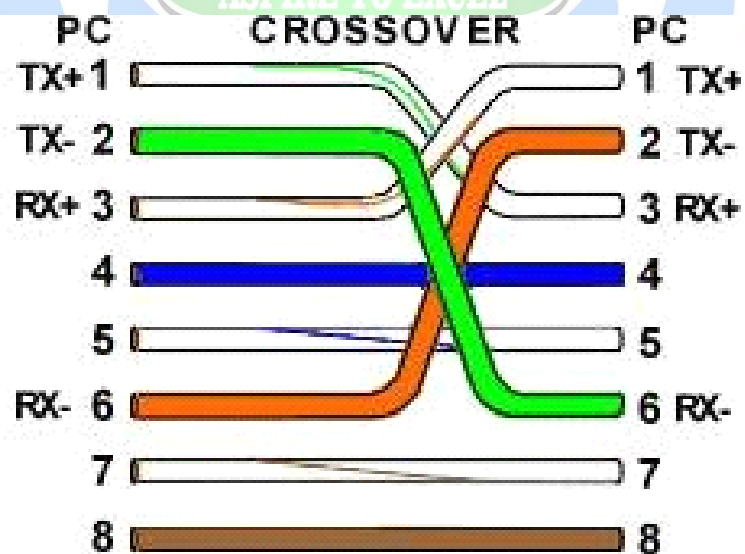
### TIA/EIA 568B Wiring

1		White and Orange
2		Orange
3		White and Green
4		Blue
5		White and Blue
6		Green
7		White and Brown
8		Brown

Straight through:



Cross over:



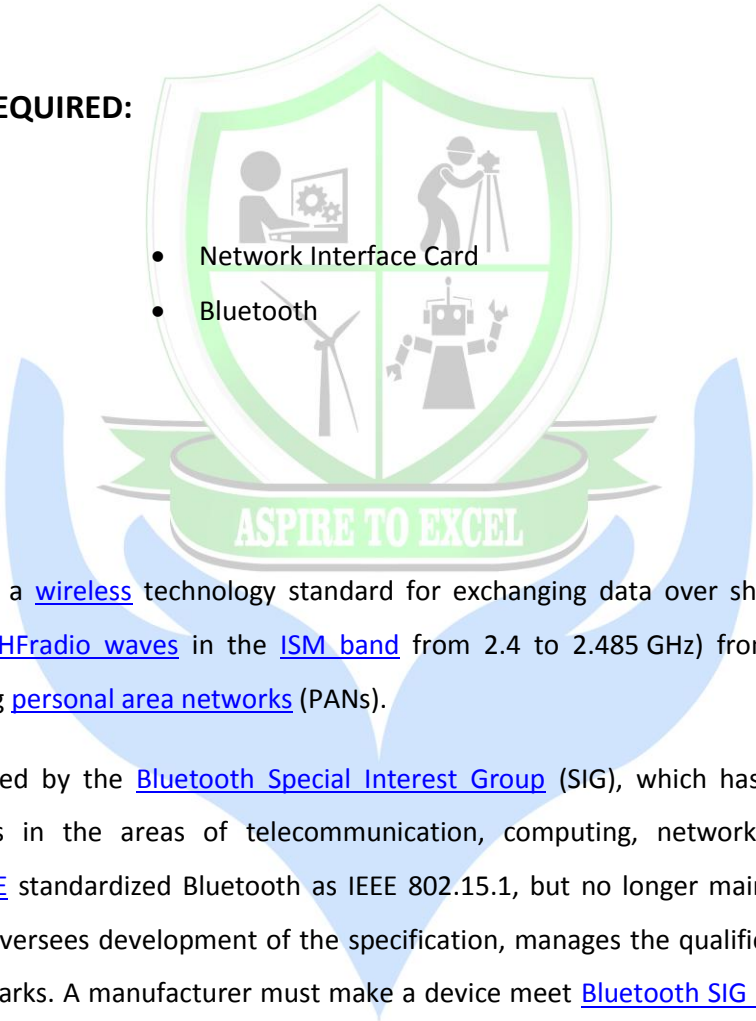
RESULT:

## NETWORKING OF DEVICES USING BLUETOOTH INTERFACE

### AIM:

To connect the networking of devices using Bluetooth as interface.

### COMPONENTS REQUIRED:

- 
- Network Interface Card
  - Bluetooth

### THEORY:

#### Bluetooth:

Bluetooth is a [wireless](#) technology standard for exchanging data over short distances (using short-wavelength [UHF radio waves](#) in the [ISM band](#) from 2.4 to 2.485 GHz) from fixed and mobile devices, and building [personal area networks](#) (PANs).

Bluetooth is managed by the [Bluetooth Special Interest Group](#) (SIG), which has more than 25,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics. The [IEEE](#) standardized Bluetooth as IEEE 802.15.1, but no longer maintains the standard. The Bluetooth SIG oversees development of the specification, manages the qualification program, and protects the trademarks. A manufacturer must make a device meet [Bluetooth SIG standards](#) to market it as a Bluetooth device. A network of [patents](#) apply to the technology, which are licensed to individual qualifying devices.

Bluetooth first appeared as a consumer technology in 2000 and it is still going strong. It's a wireless communication protocol for connecting devices through the air - it's slower than [Wi-Fi](#) but is often simpler to set up, and is usually preferred for device-to-device transfers.

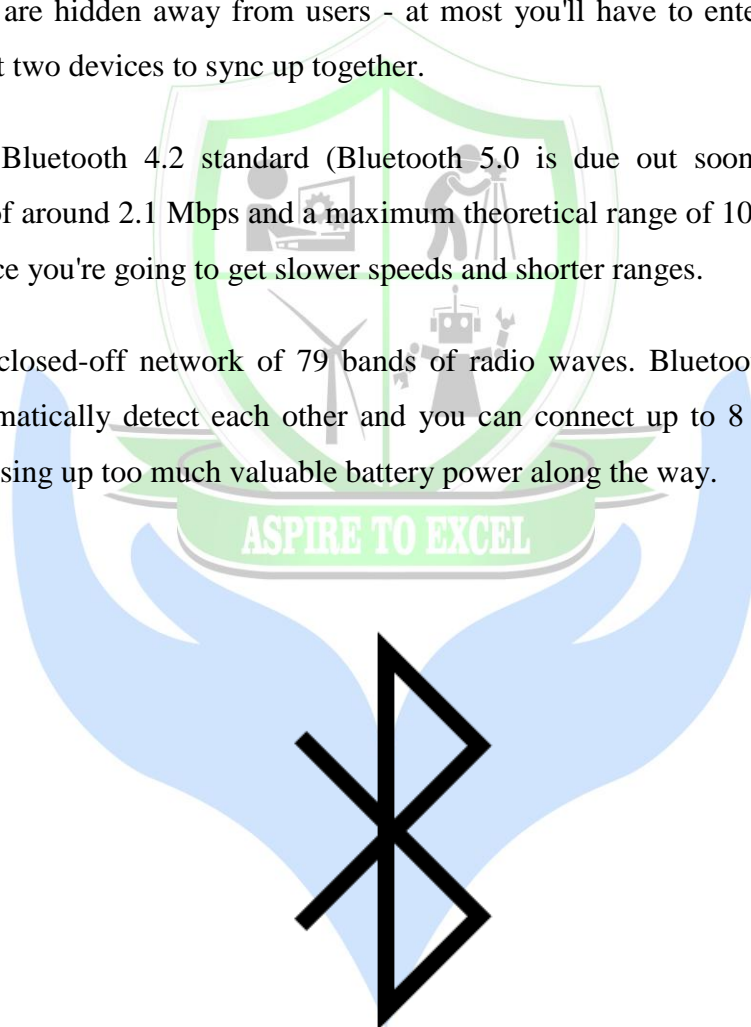
With just about every [Smartphone](#) out there supporting Bluetooth, it's become the default way for connecting up speakers, headphones and other devices to phones without wires. It works across plenty of other devices too, including printers, remotes and computers.

### **Characteristics of Bluetooth:**

Bluetooth is designed to be as easy to use as possible which means a lot of the technical aspects of the technology are hidden away from users - at most you'll have to enter a PIN code when you're trying to get two devices to sync up together.

The most recent Bluetooth 4.2 standard (Bluetooth 5.0 is due out soon) lists a maximum theoretical speed of around 2.1 Mbps and a maximum theoretical range of 100 meters (about 330 feet), but in practice you're going to get slower speeds and shorter ranges.

Bluetooth uses a closed-off network of 79 bands of radio waves. Bluetooth devices have the capability to automatically detect each other and you can connect up to 8 different devices at once, all without using up too much valuable battery power along the way.



### **Bluetooth works:**

Bluetooth devices are managed using an RF topology known as a "star topology." A group of devices synchronized in this fashion forms a piconet, which may contain one master and up to seven active slaves, with additional slaves that are not actively participating in the

network. (A given device may also be part of one or more pioneers, either as a master or as a slave.) In a pioneer, the physical radio channel is shared by a group of devices that are synchronized to a common clock and frequency-hopping pattern, with the master device providing the synchronization references. Devices in a pioneer use a specific frequency-hopping pattern, which is algorithmically determined by the master device. The basic hopping pattern is a pseudorandom ordering of the 79 frequencies in the ISM band. The hopping pattern may be adapted to exclude a portion of the frequencies that are used by interfering devices. The adaptive hopping technique improves Bluetooth technology's coexistence with static (no hopping) ISM systems, such as Wi-Fi networks, when these are located in the vicinity of a pioneer.

The physical channel (or the wireless link) is subdivided into time units known as slots. Data is transmitted between Bluetooth-enabled devices in packets that are positioned in these slots. Frequency hopping takes place between the transmission or reception of packets, so the packets that make up one transmission may be sent over different frequencies within the ISM band.

The physical channel is also used as a transport for one or more logical links that support synchronous and asynchronous traffic as well as broadcast traffic. Each type of link has a specific use. For instance, synchronous traffic is used to carry hands-free audio data, while asynchronous traffic may carry other forms of data that can withstand more variability in the timing for delivery, such as printing a file or synchronizing your calendar between your phone and computer.

One of the complexities often associated with wireless technology is the process of connecting wireless devices. Users have become accustomed to the process of connecting wired devices by plugging one end of a cable into one device and the other end into the complementary device.

Bluetooth technology uses the principles of device "inquiry" and "inquiry scan." Scanning devices listen in on known frequencies for devices that are actively inquiring. When an inquiry is received, the scanning device sends a response with the information needed for the inquiring device to determine and display the nature of the device that has recognized its signal.

Let's say you want to wirelessly print a picture from your mobile phone to a nearby printer. In this case, you go to the picture on your phone and select print as an option for sending that

picture. The phone would begin searching for devices in the area. The printer (the scanning device) would respond to the inquiry and, as a result, would appear on the phone as an available printing device. By responding, the printer is ready to accept the connection. When you select the Bluetooth wireless printer, the printing process kicks off by establishing connections at successively higher layers of the Bluetooth protocol stack that, in this case, control the printing function.

Like any successful technology, all of this complexity goes on without the user being aware of anything more than the task he or she is trying to complete, like connecting devices and talking hands-free or listening to high-quality stereo music on wireless headphones.

### **Discovery**

In the discovery phase, the Bluetooth module broadcasts its name, profile support, and MAC address. It is ready for other devices to pair with it. Discovery is only available in slave mode.

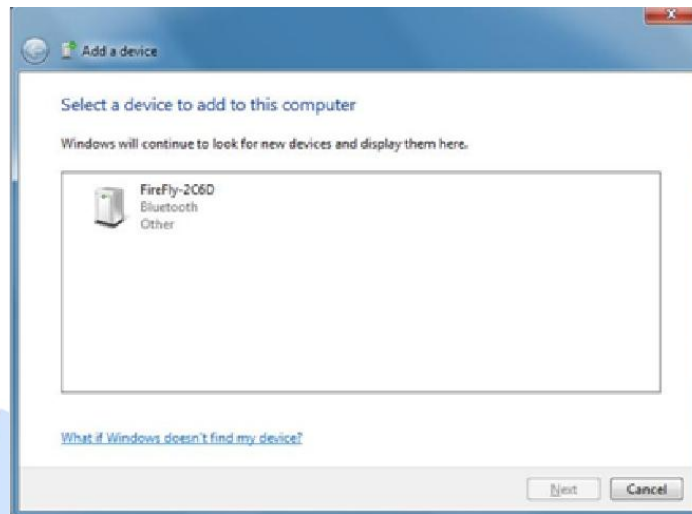
### **Pairing**

During pairing, the Bluetooth module and the Bluetooth master validate the pin code. If the pin code validates successfully, they exchange security keys and a channel hopping pseudo-random sequence. Successful pairing results in the module and master establishing link keys.

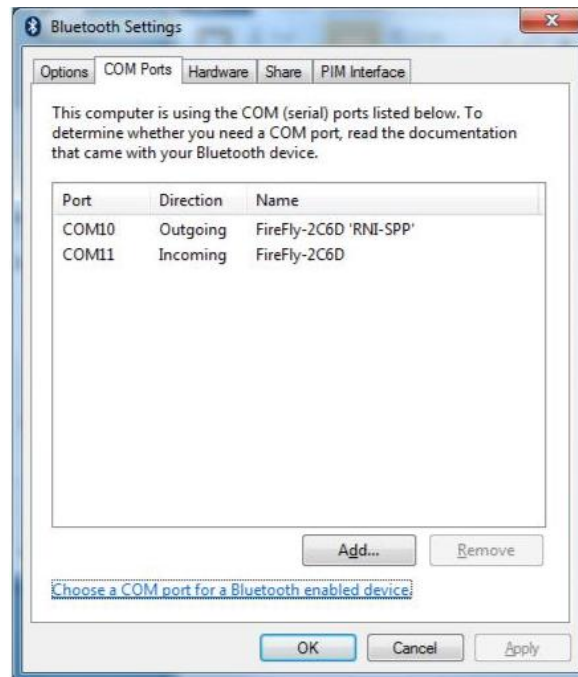
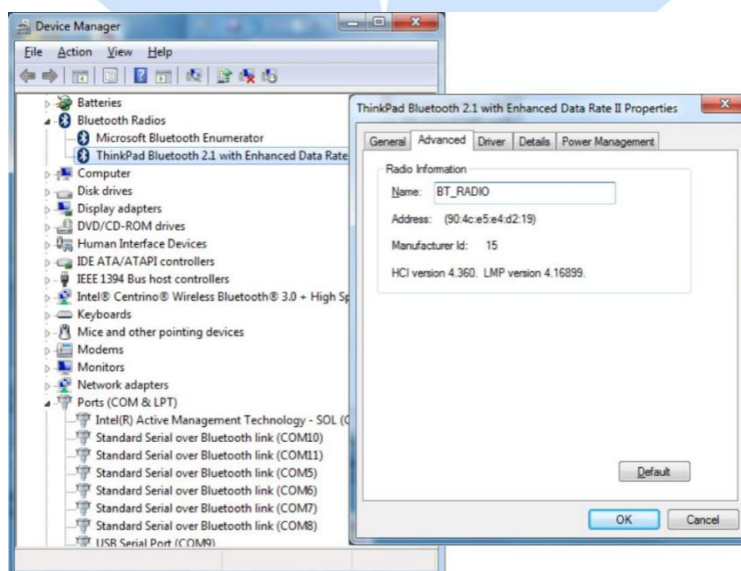
### **Connecting**

Before connecting, the Bluetooth devices must have paired successfully. The master initiates a connection, the master and slave validate the link

keys, and a Bluetooth link is established

**PROCEDURE:****STEP1 :Discover the Bluetooth module****STEP 2: Pair with the Bluetooth Module**

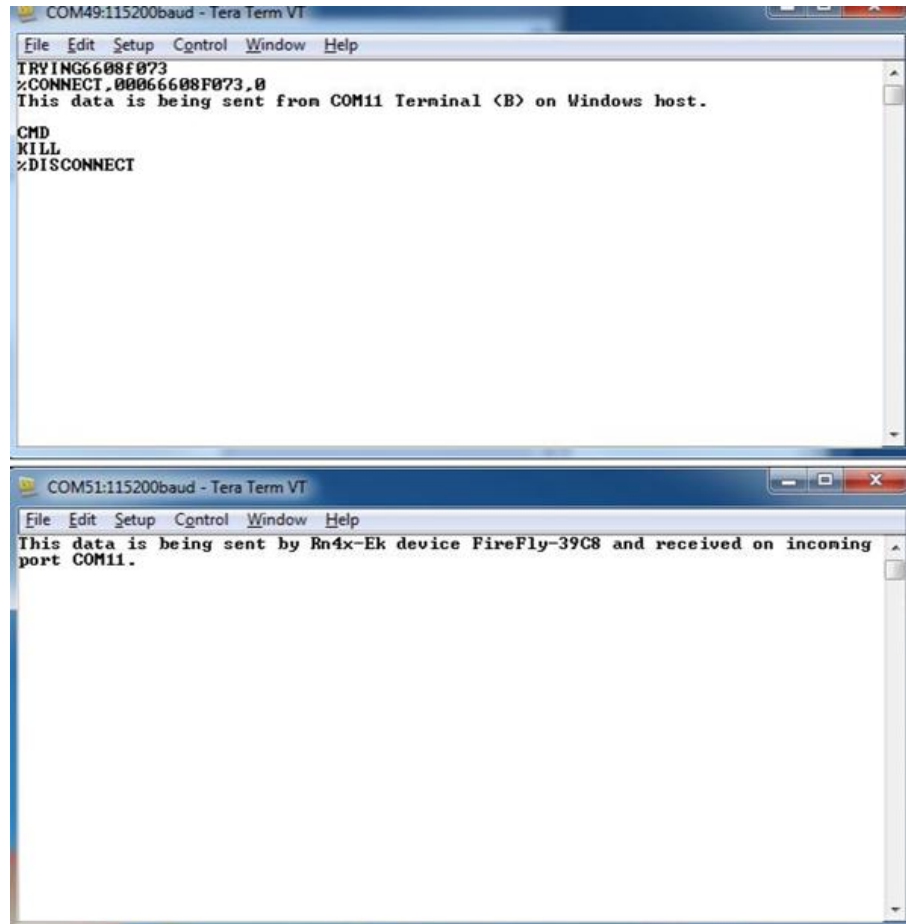


**STEP 3: Bluetooth Comport setting****STEP 4: PC's Bluetooth Radio MAC Address**

Exp. No.:

Date :

### STEP 5: Terminal A and B



The image displays two screenshots of Tera Term VT terminal windows. The top window, titled 'COM49:115200baud - Tera Term VT', shows the following text: 'TRYING6608F073', 'zCONNECT.00066608F073,0', 'This data is being sent from COM11 Terminal <B> on Windows host.', 'CMD', 'KILL', and 'zDISCONNECT'. The bottom window, titled 'COM51:115200baud - Tera Term VT', shows the text: 'This data is being sent by Rn4x-Ek device FireFly-39C8 and received on incoming port COM11.'.

```
COM49:115200baud - Tera Term VT
File Edit Setup Control Window Help
TRYING6608F073
zCONNECT.00066608F073,0
This data is being sent from COM11 Terminal <B> on Windows host.
CMD
KILL
zDISCONNECT

COM51:115200baud - Tera Term VT
File Edit Setup Control Window Help
This data is being sent by Rn4x-Ek device FireFly-39C8 and received on incoming
port COM11.
```

**RESULT:**

## SIMULATION OF A GIVEN CIRCUIT USING A PSpICE CIRCUIT SIMULATOR

**AIM:**

To construct a circuit (high pass, low pass) filter using Pspice simulation tool.

**COMPONENTS REQUIREMENTS:**

- PSpice
- Windows operating system
- Hard disk 40 GB
- keyboard.

**THEORY:****I) HIGH PASS FILTER**

High pass filter allows high frequency signals from its cut-off-frequency,  $f_c$  point and higher to infinity to pass through while blocking those any lower. A high pass filter is an electronic filter that passes high frequency signals but alternates signals with frequency lower than the cut-off frequency

The actual amount of alternation for each frequency varies from filter to filter to filter. A high pass filter is usually modeled as a linear time invariant system. It is sometimes called a low cut filter or bass-cut filter

The circuit arrangement, the reactance of the capacitor is very high at low frequencies so the capacitor acts like an open circuit and blocks any input signals at  $V_{in}$  until the cut-off frequency point

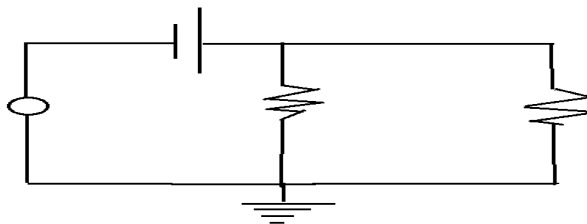
( $f_c$ ) is reached. Above this cut-off frequency point the reactance of the capacitor has reduced sufficiently as to now act more like a short circuit allowing all of the input signal to pass directly to the output as shown below in the High Pass Frequency Response Curve.

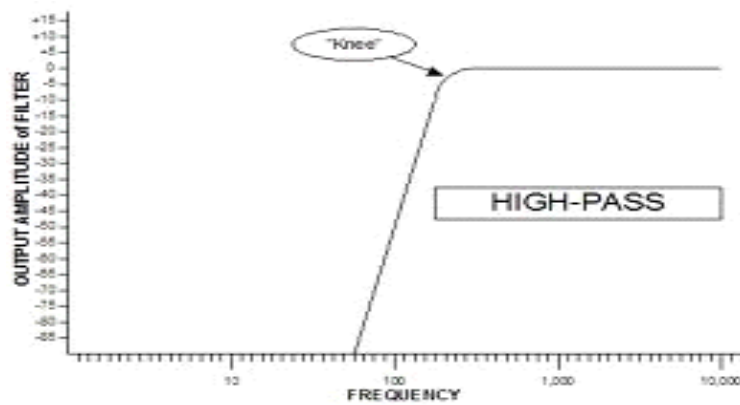
The Bode Plot or Frequency Response Curve above for a High Pass filter is the exact opposite to that of a low pass filter. Here the signal is attenuated or damped at low frequencies with the output increasing until the frequency reaches the cut-off point ( $f_c$ ) where again  $R = X_c$ . It has a response curve that extends down from infinity to the cut-off frequency,

The **High Pass Filter** is the exact opposite to the low pass filter. A very common application of a passive high pass filter, is in audio amplifiers as a coupling capacitor between two audio amplifier stages and in speaker systems to direct the higher frequency signals to the smaller "tweeter" type speakers while blocking the lower bass signals or are also used as filters to reduce any low frequency noise or "rumble" type distortion. When used like this in audio applications the high pass filter is sometimes called a "low-cut", or "bass cut" filter.

**HIGH PASS FILTER:**

**CIRCUIT DIAGRAM**



**GRAPH****PROCEDURE**

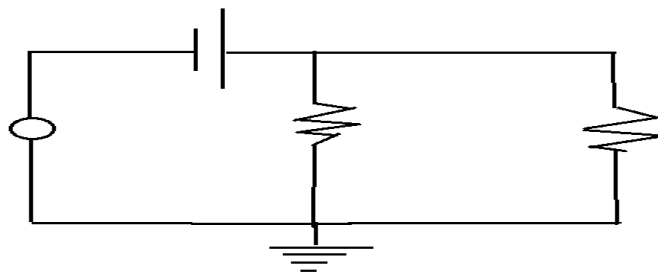
1. Open Pspice program under oracle family release.
2. Gotocaptures and selects the desired option.
3. Select file-----> new----->project and the will get an empty bread board screen with pin configuration.
4. Selectplace part and select the desired components such as capacitors,resistors,wires and voltage source.
5. Press R for resistor for capacitor and O for ground and use source.
6. For the construction of the high pass filter place the voltage,resistor,source and capacitor in series with wired connection.
7. Place the resistor in parallel and thereby establish a parallel connection between the resistor in series with the capacitor.
8. Then gotoPspice----new simulation profile----analysis type---AC simple/noise.
9. Set the frequency start, stop and point pin decade

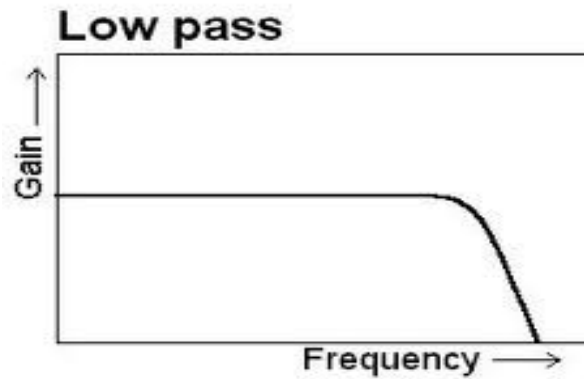
**II) LOW PASS FILTER:****THEORY**

The low pass filter only allow low frequency signals from 0Hz to its cut-off frequency, ( $f_c$ ) points to pass while blocking those any higher. A low pass filter is an electronic filter that passes low frequency signals but alternates signals with frequency signals with frequency higher than the cut-off- frequency.

The actual amount of attenuation for each frequency varies from filter to filter, It is sometimes called a high cut off filter ,or trouble cut filter, where used in radio application. Low pass filters are used in a wide number of applications. Particularly in radio frequency applications, low pass filters are made in their LC form using inductors and capacitors. Typically they may be used to filter out unwanted signals that may be present in a band above the wanted pass band. In this way, this form of filter only accepts signals below the cut-off frequency.

Low pass filters using LC components, i.e. inductors and capacitors are arranged in ether a pi or T network. For the pi section filter, each section has one series component and either side a component to ground. The T network low pass filter has one component to ground and either side there is a series in line component. In the case of a low pass filter the series component or components are inductors whereas the components to ground are capacitors.

**LOW PASS FILTER:****CIRCIT DIAGRAM**

**GRAPH****PROCEDURE**

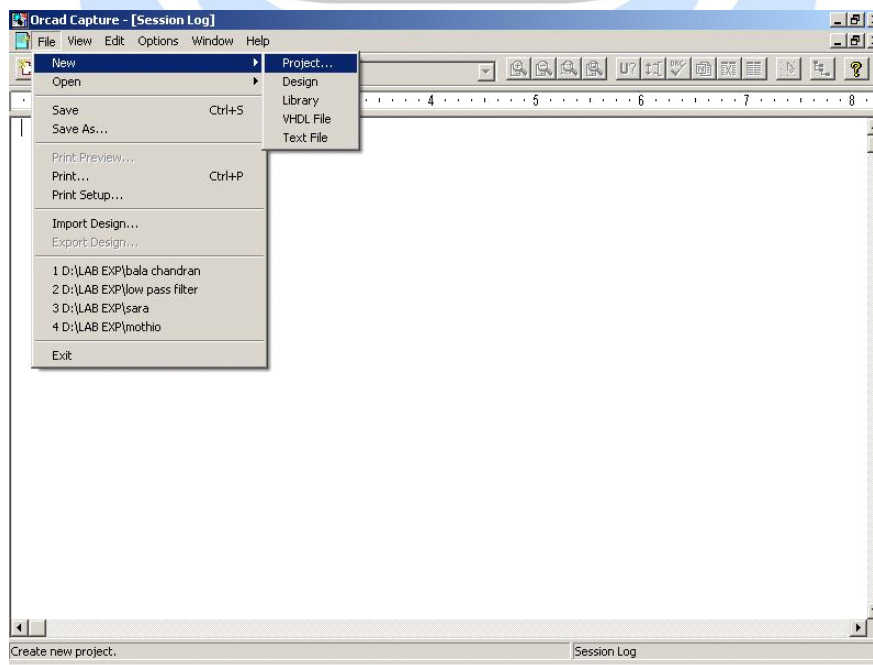
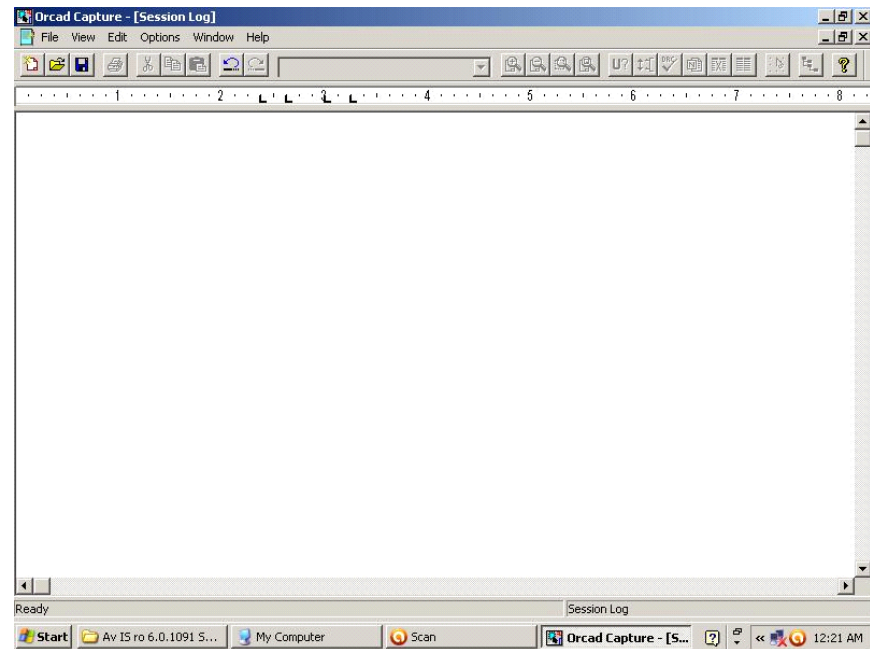
1. Open Pspice program under oracle family release.
2. Goto captures and selects the desired option.
3. Select file-----> new----->project and the will get an empty bread board screen with pin configuration.
4. Select place part and select the desired components such as capacitors,resistors,wires and voltage source.
5. Press R for resistor for capacitor and O for ground and use source.
6. For the construction of the low pass filter place the voltage, resistor, source and capacitor in series with wired connection.
7. Place the resistor in parallel and thereby establish a parallel connection between the resistor in series with the capacitor.
8. Then gotoPspice----new simulation profile----analysis type---AC simple/noise.
9. Set the frequency start, stop and point /decade



Exp. No.:

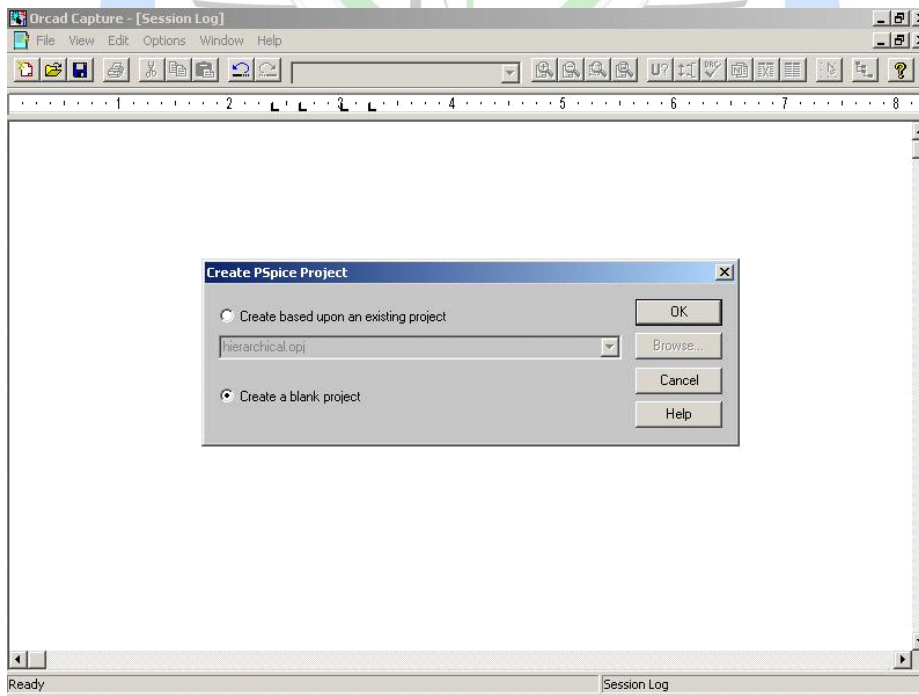
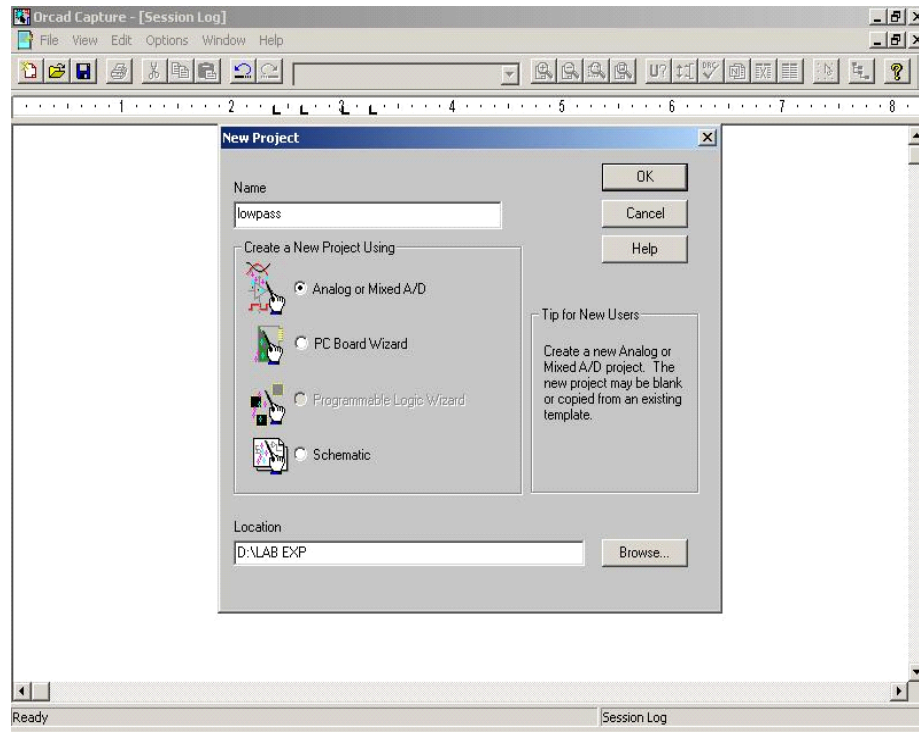
Date :

**SCREEN SHOTS :**



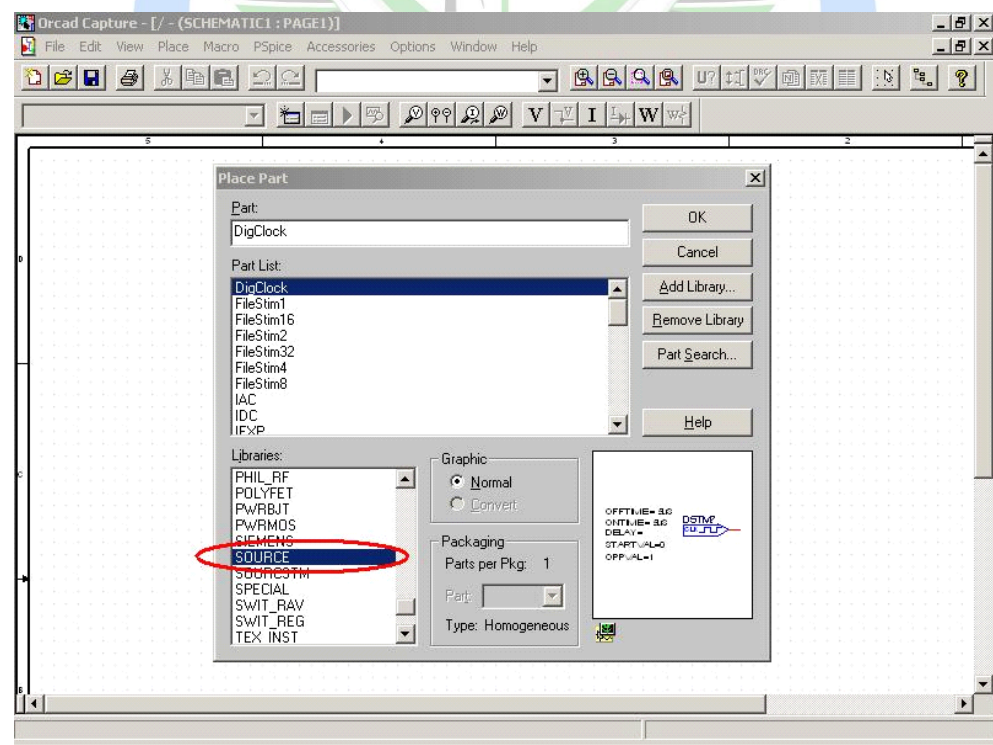
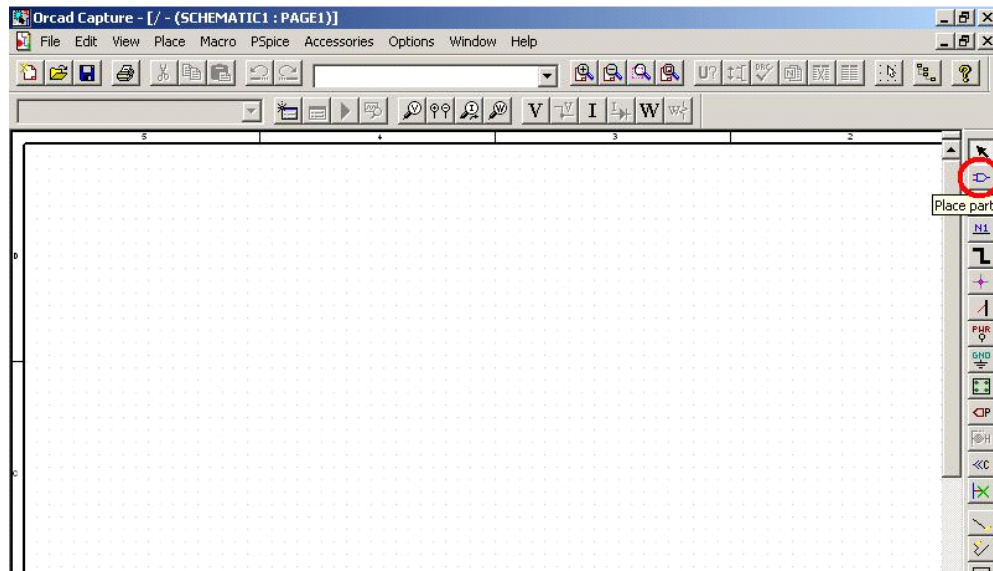
Exp. No.:

Date :



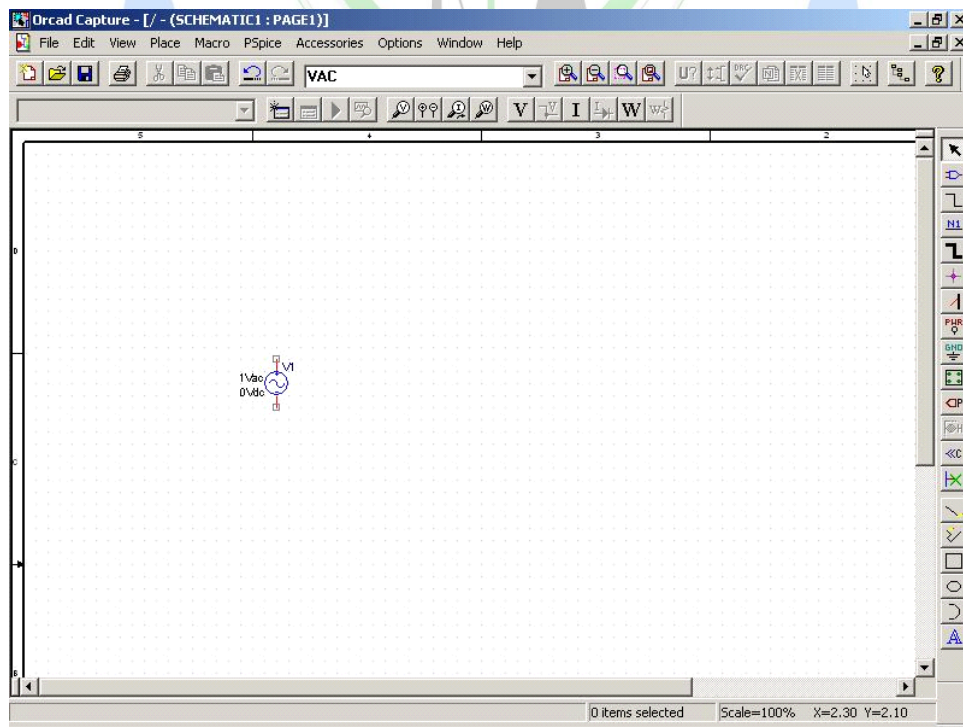
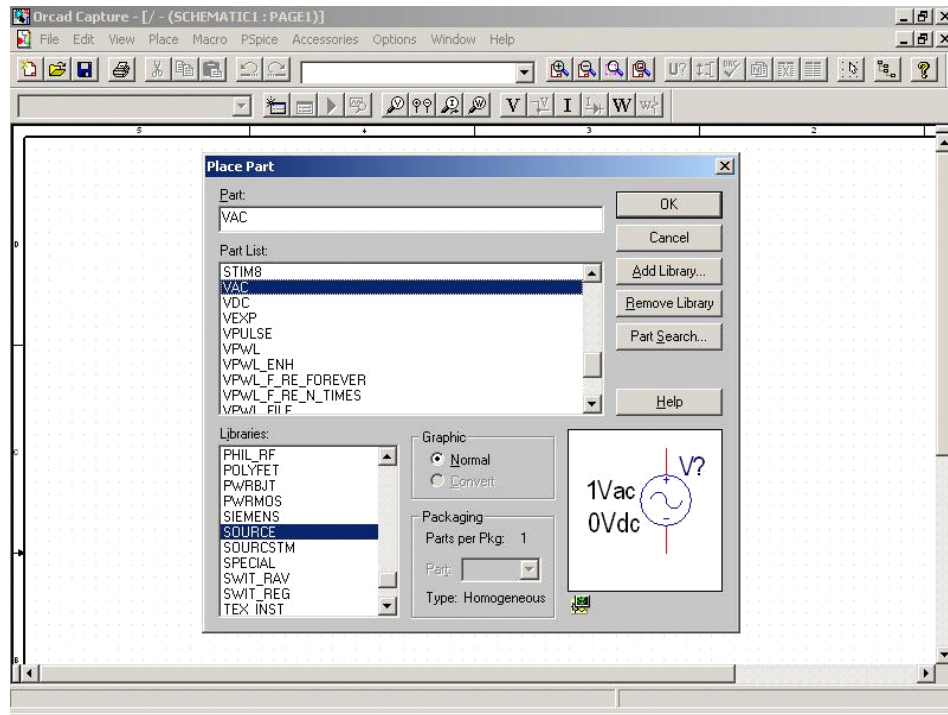
Exp. No.:

Date :



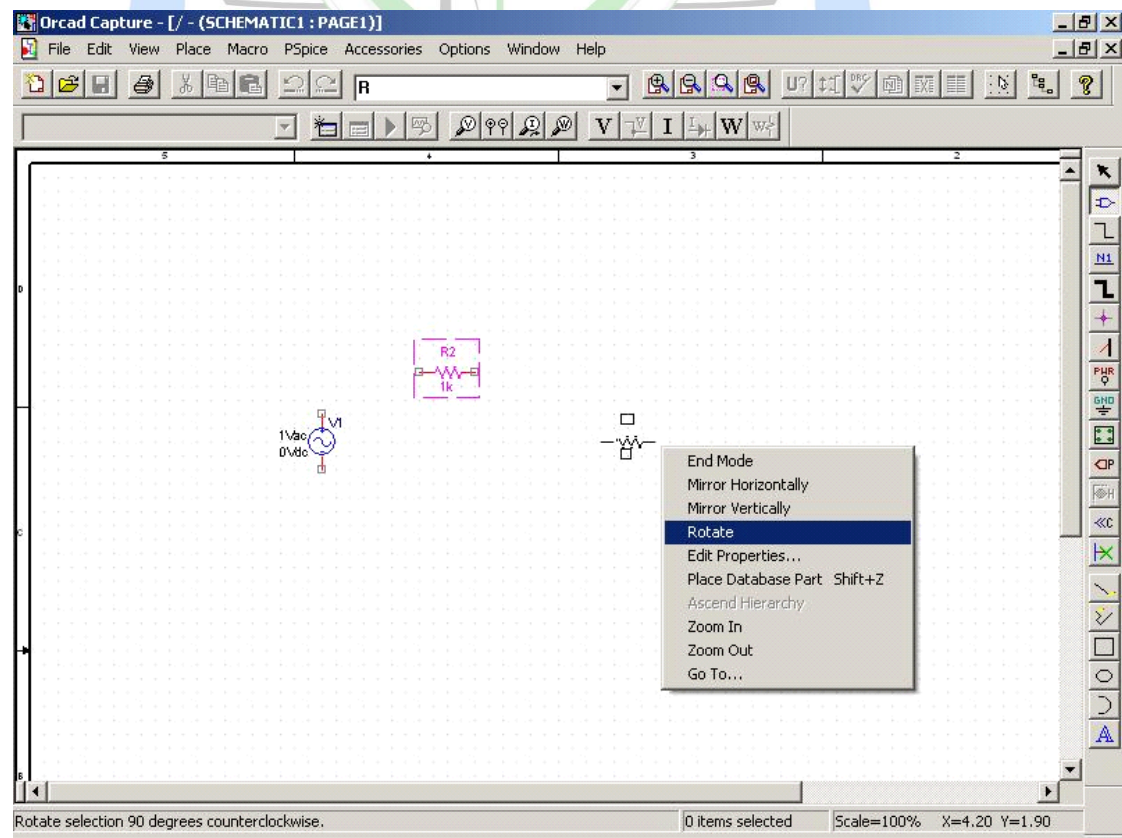
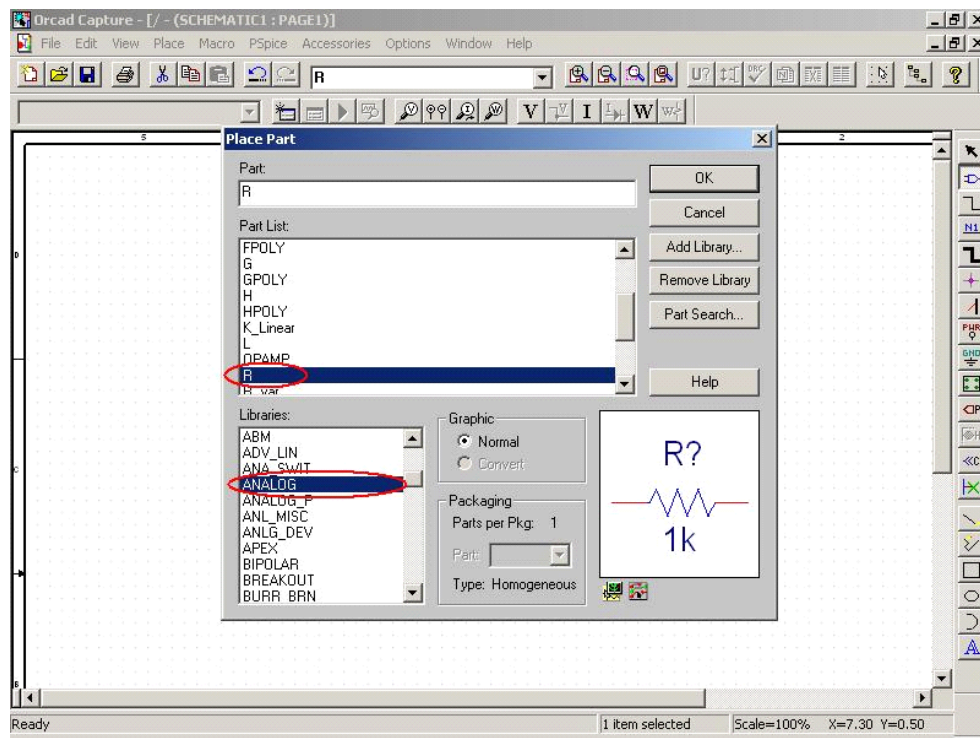
Exp. No.:

Date :



Exp. No.:

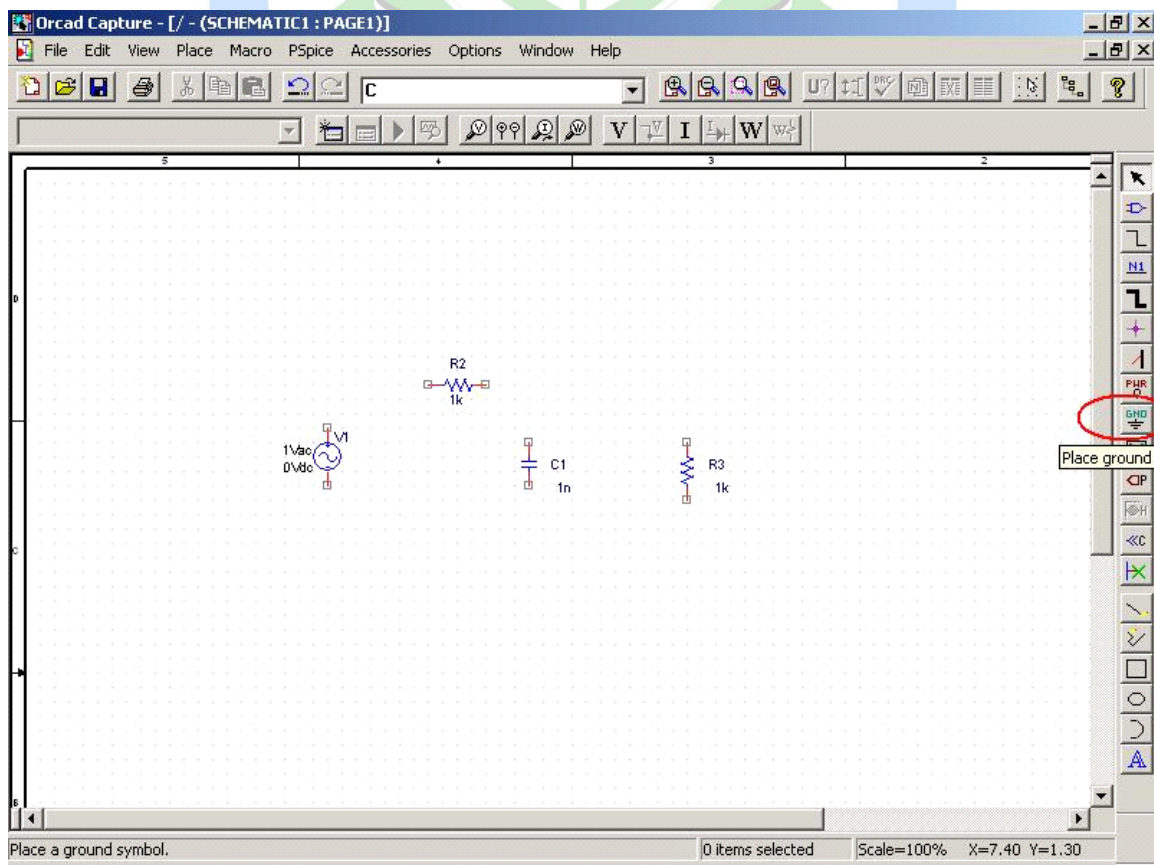
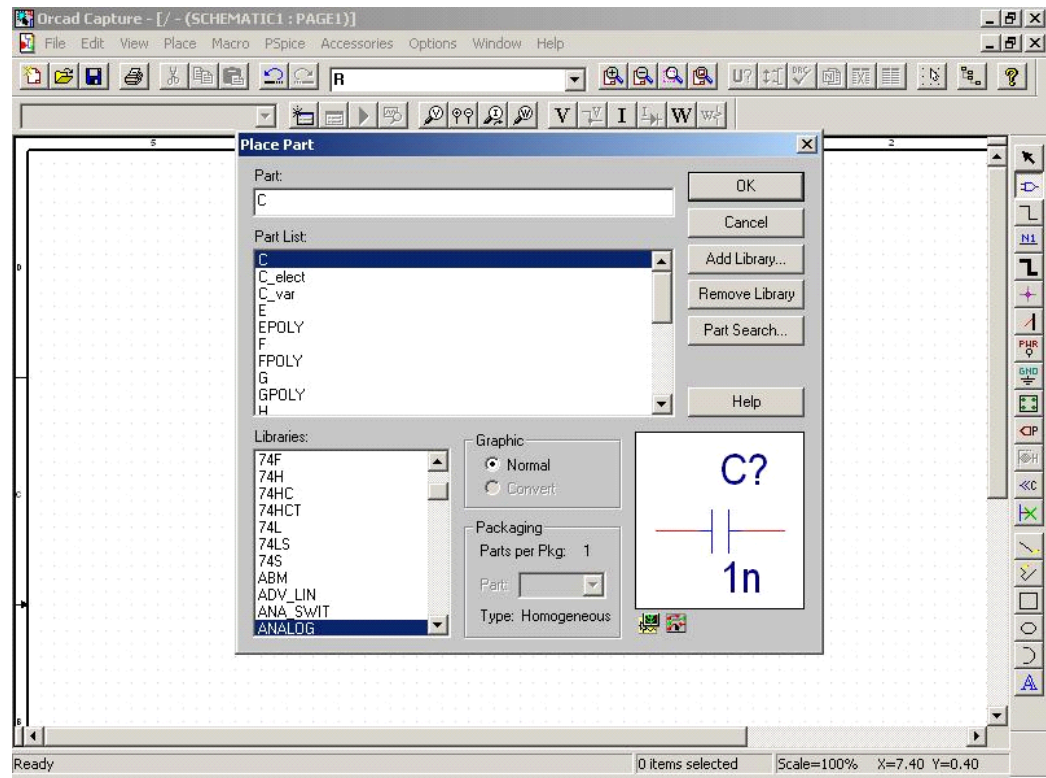
Date :





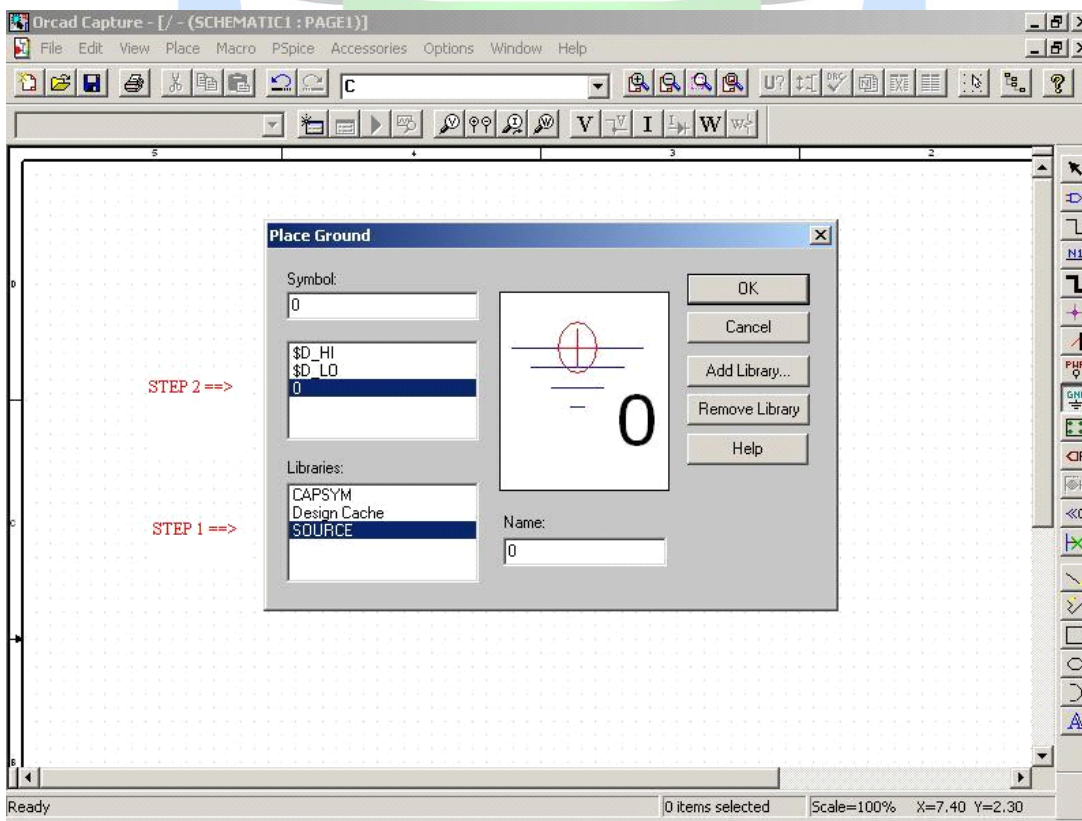
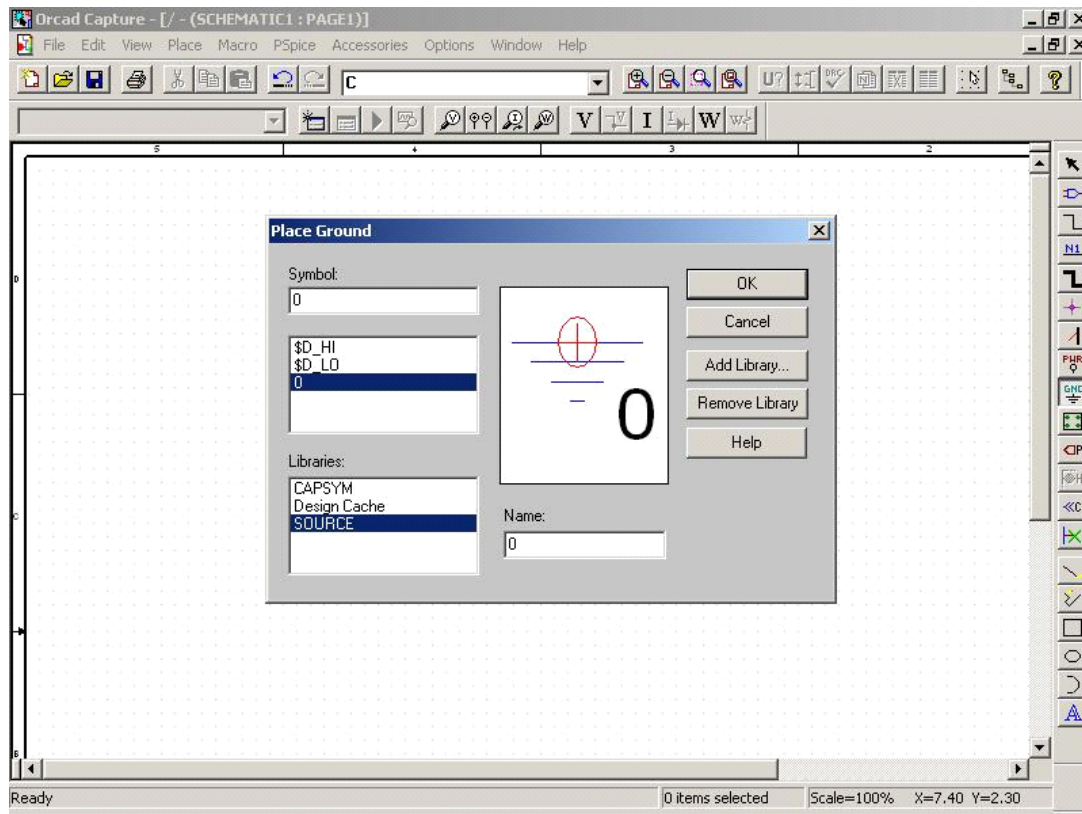
Exp. No.:

Date :



Exp. No.:

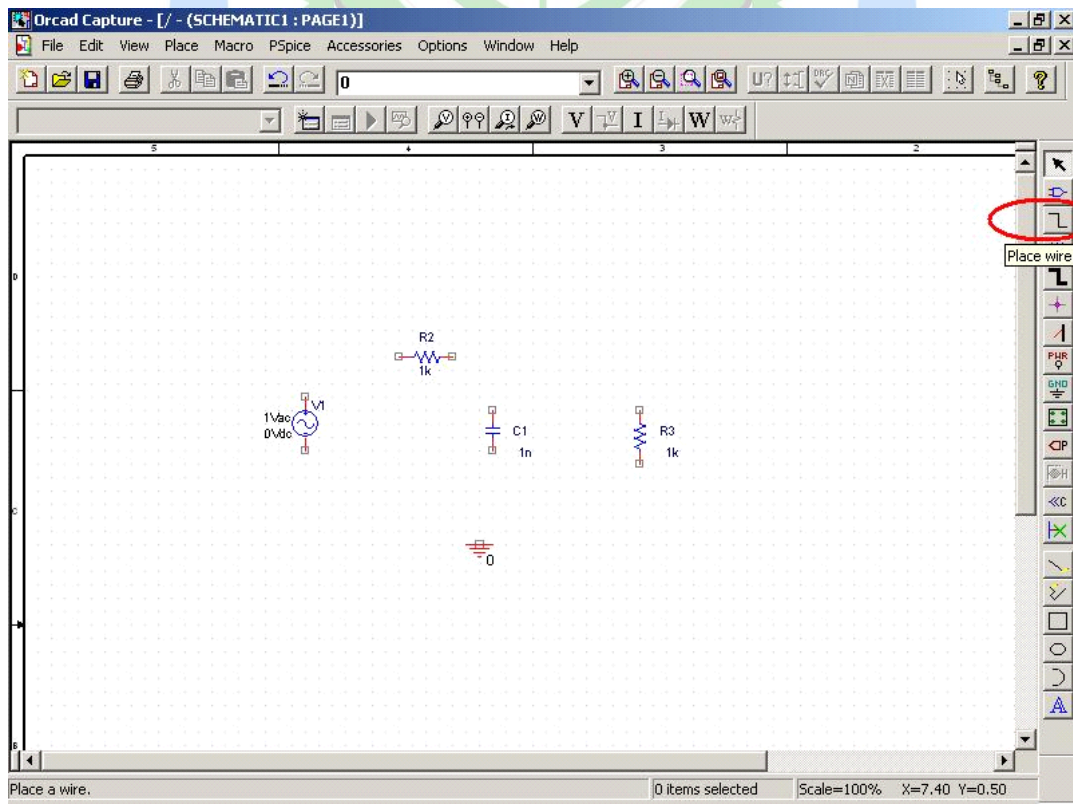
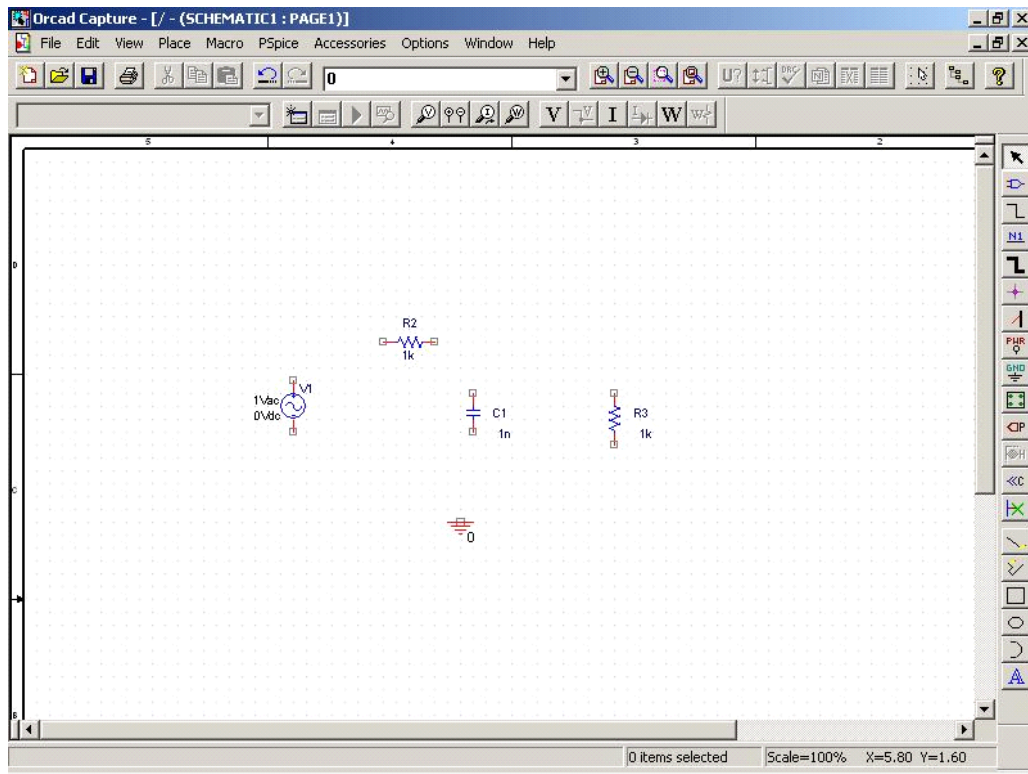
Date :





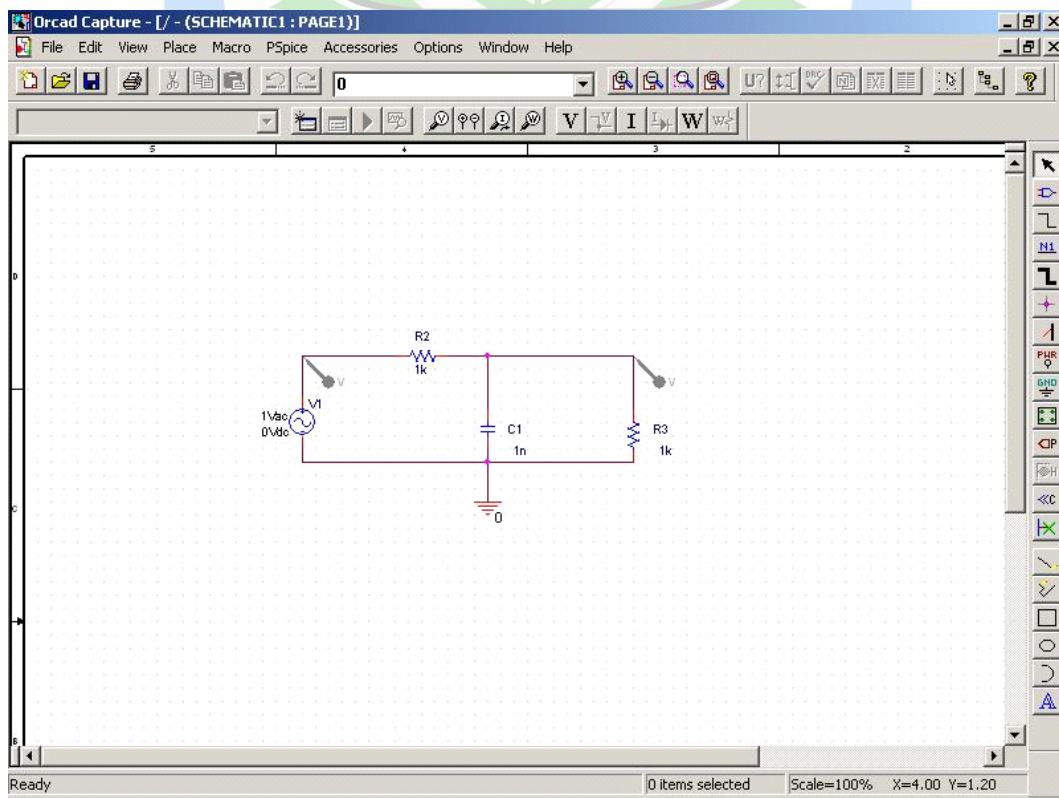
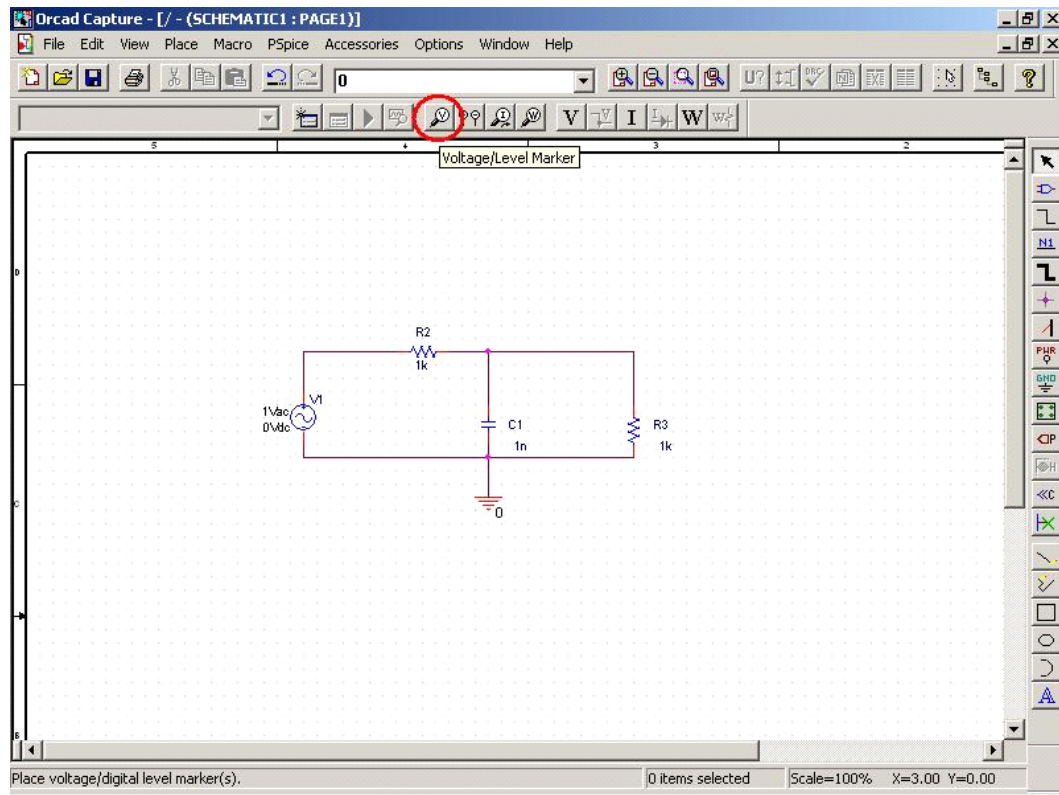
Exp. No.:

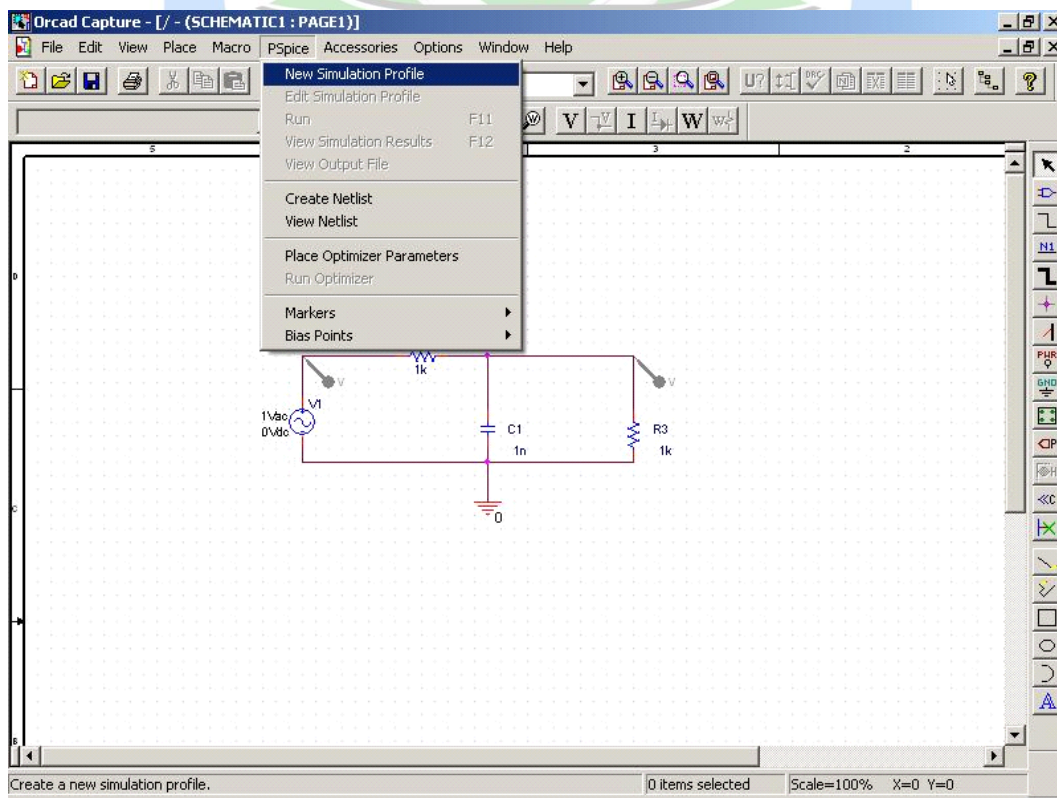
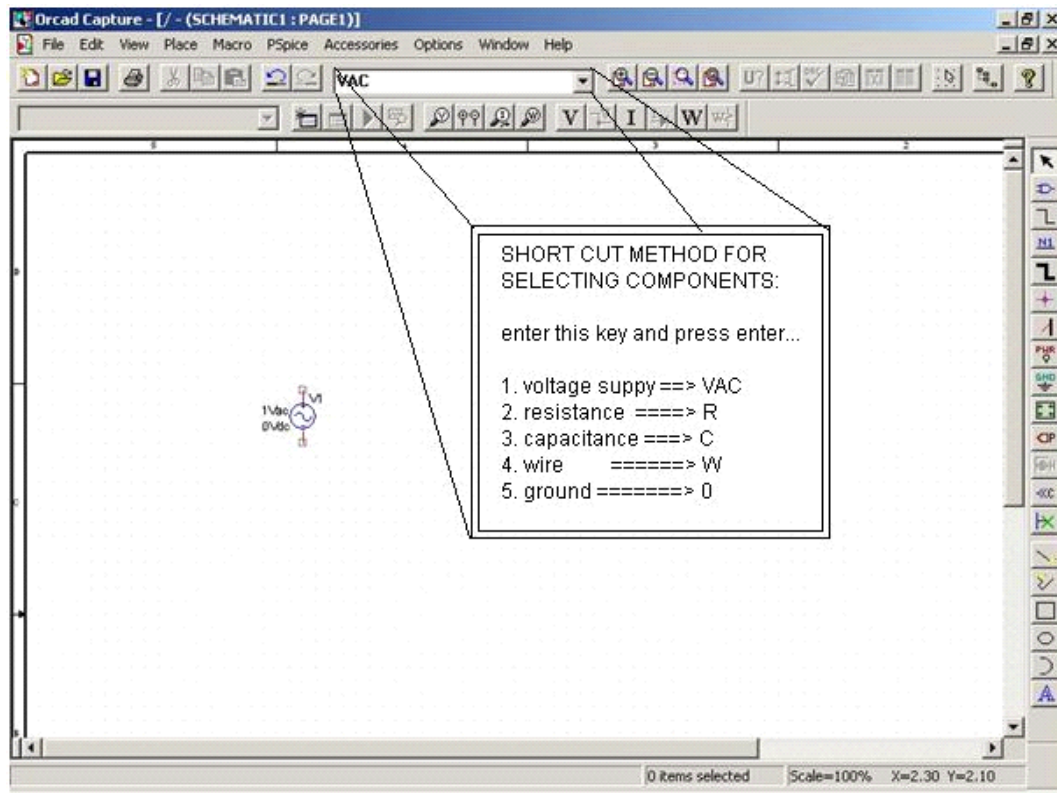
Date :



Exp. No.:

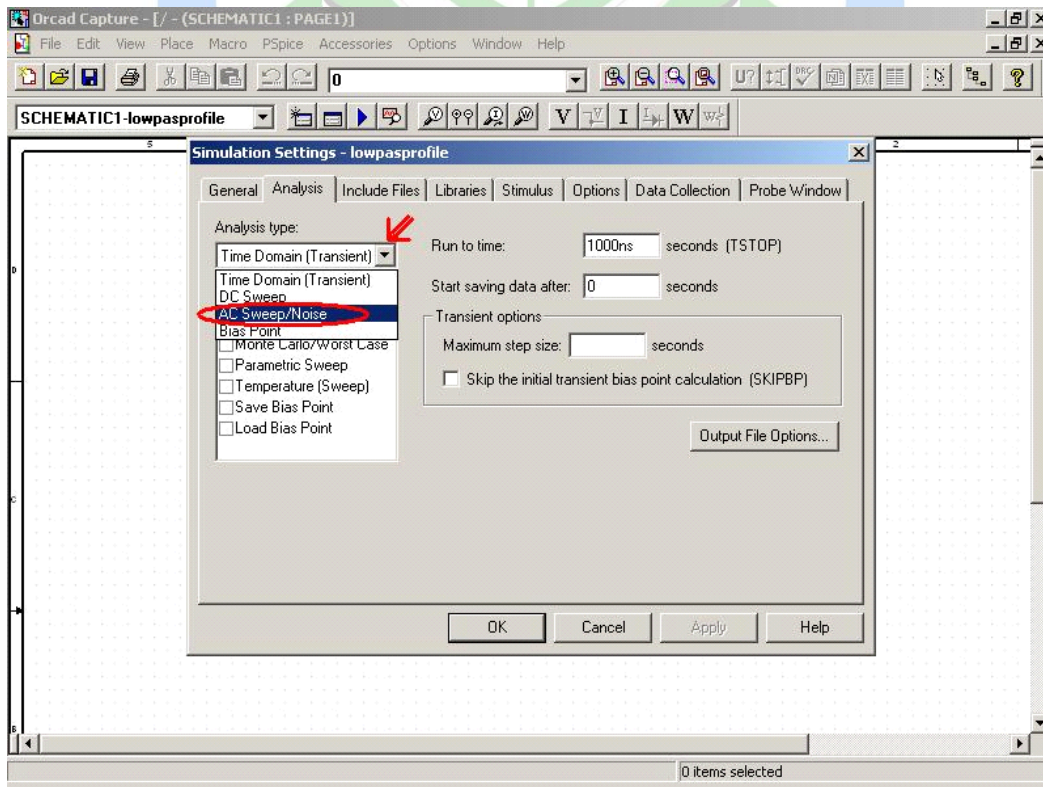
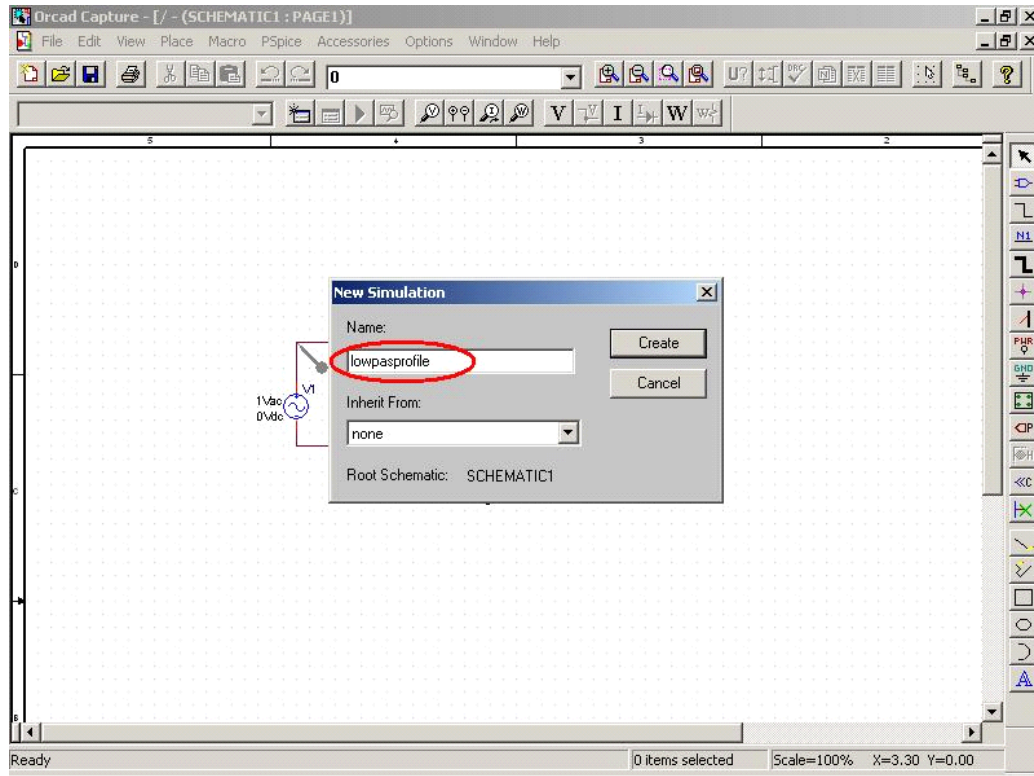
Date :





Exp. No.:

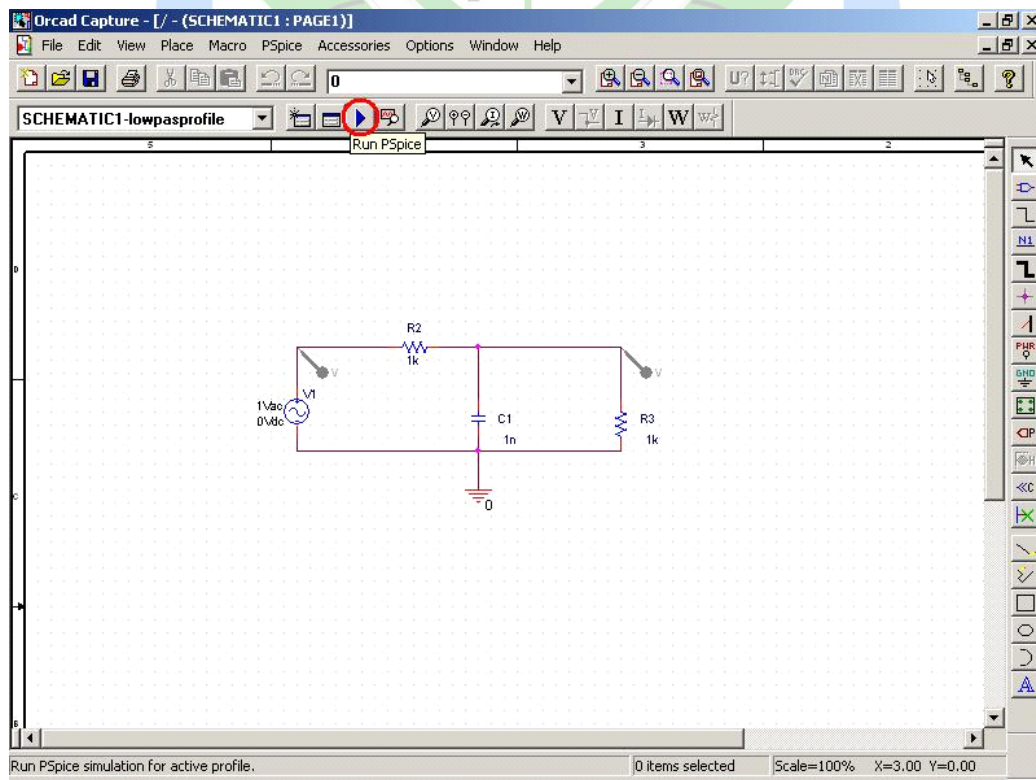
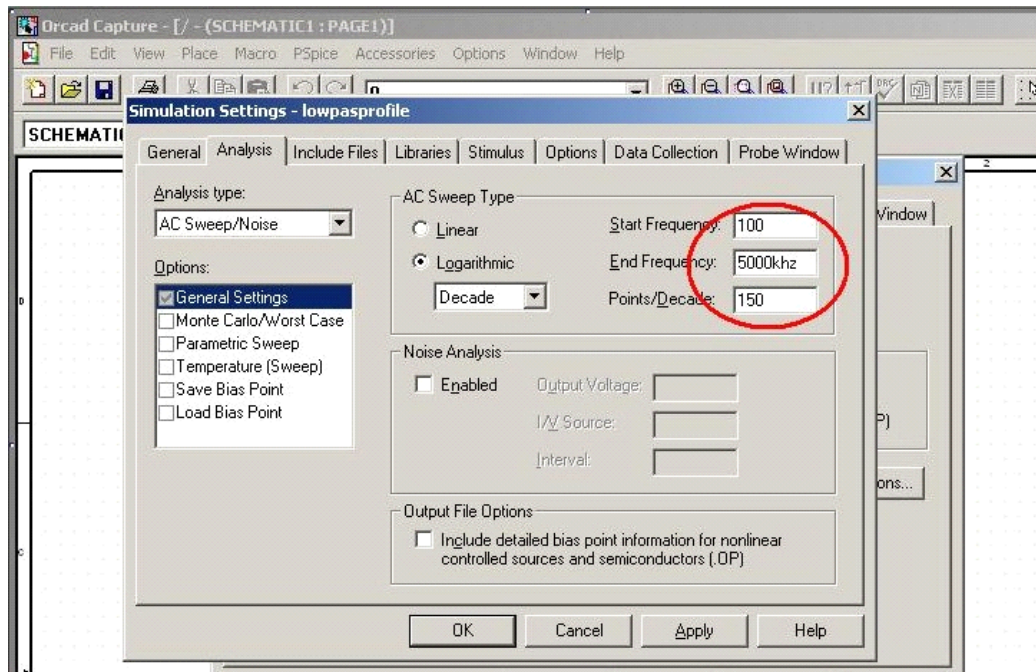
Date :





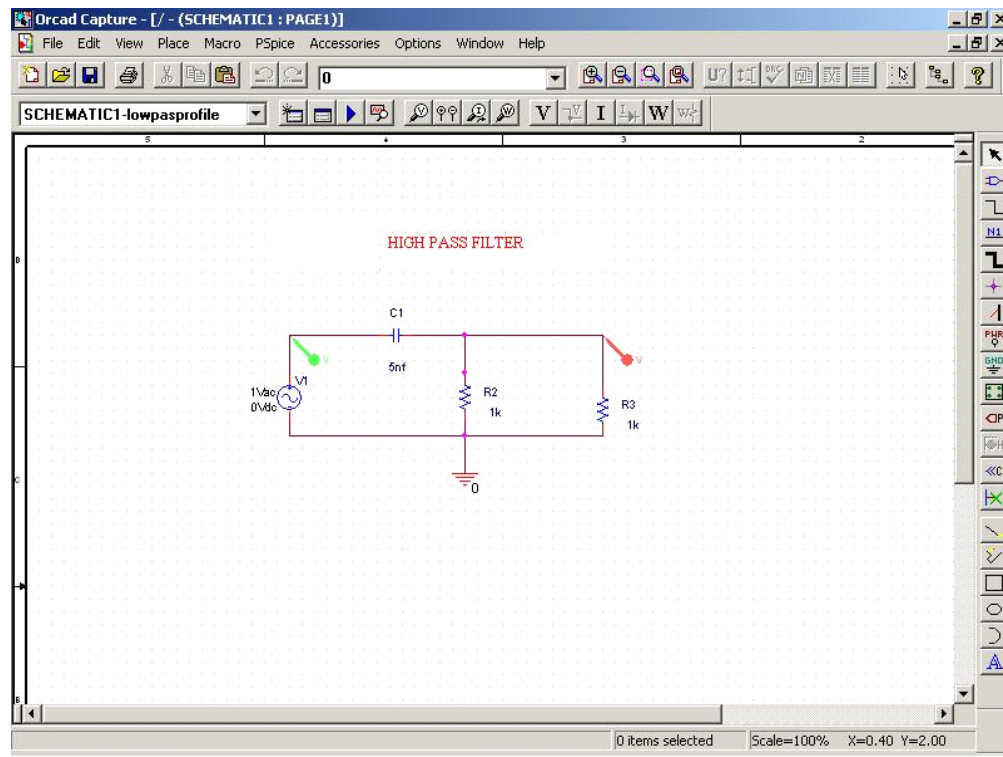
Exp. No.:

Date :



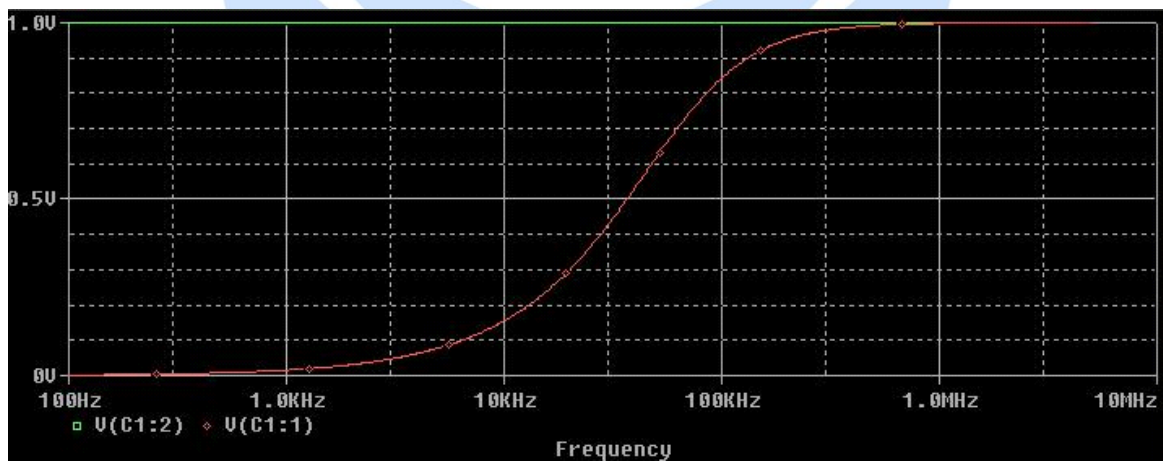
Exp. No.:

Date :



**SIMULATION RESULT:**

**HIGH PASS FILTER:**



**RESULT:**